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Nelson's Geography Practice Series

Edited by JOHN GUNN, M.A., D.Sc., F.R.S.G.S.

CANADA

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INTRODUCTORY NOTE

THE aim of this book is not only to give the pupil a competent knowledge of the Geography of Canada, but to do so in such a manner that he will grasp the scientific principles which underlie and explain the geography of the whole world. Attention is therefore given to the relations of cause and effect which exist between one fact and another, so that the study of Geography becomes a training in scientific reasoning instead of a mere memory exercise.

As regards method, the fundamental principle is the making use of the pupil's individual activity—learning by doing. Hence the exercises are an integral part of each lesson, and not a mere appendix to it. Various types of activity are provided for in these exercises—individual study of maps and books, interpretation of statistical graphs and diagrams and construction of such, comparison and correlation of facts, etc.—but these should be regarded as suggestive rather than prescriptive, and the teacher may devise alternatives better adapted to the circumstances of the school.

The use of an Atlas by the pupil is assumed, and topographical details which should be learned from the map are not repeated in the text.

Illustrations, which are supplied in abundance, have been selected for their representation of geographical fact rather than their pictorial value.

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CANADA

PART I—PHYSICAL CONDITIONS

1. POSITION, EXTENT, AND BOUNDARIES

FIND in your atlas the political map of North America. The different colours on the map show the countries which are under different governments. You see two very large countries—the Dominion of Canada and the United States. Of these Canada is somewhat the larger. The area of the great Dominion is about 3¾ millions of square miles, while that of the United States, including Alaska, is 3½ millions.

Notice the boundaries of Canada. Some parts have natural boundaries, and some parts have artificial boundaries, formed by straight lines. It will be seen that for a long distance in the western region—1,200 miles—Canada and the United States are separated on the map by a line drawn from a point near Vancouver to a point near the Lake of the Woods. This line is just below the line marked 50 at the edge of the map. It is what is called the parallel of 49° north latitude.

The irregular boundary east of the Lake of the Woods is a very long chain of lakes and rivers, running south, in one place on Lake Erie, to the parallel of 42° north latitude.

Nearly opposite Cornwall, Ontario, you will notice that the boundary starts to move eastwards along the parallel of 45° north latitude, and continues along this artificial line for nearly 150 miles. Thence to the sea the northern part of the State of Maine serves as the boundary.

You will see, then, that the southern boundary of Canada, for the greater part of its course, follows certain lines of latitude, agreed upon in old treaties.

On the east and north the boundaries of Canada, as you will notice, are most irregular. Gulfs and bays, straits and sounds, and channels and inlets, almost countless, make a very difficult task for the map-makers.

On the west you will see a very strange situation. The Pacific Ocean touches the coast of Canada from the parallel of 49° north latitude to a point just north of Prince Rupert. From that point all northern British Columbia and Yukon are cut off from the sea by a strip of territory which the United States bought from Russia in the very birth-year of the Dominion, 1867. In this region the boundary line runs along the crest of the mountain range nearest the sea.

Turn next to the map of Canada itself, where you will find the country shown on a larger scale. You should spend a good deal of time studying this map. In your study you will learn the position of the Provinces and Territories.

The study of the political divisions of Canada does not properly belong to this part of the book, but it is necessary to refer to them here, as the names will occur in almost every chapter.

The three provinces on or near the Atlantic—Nova Scotia, New Brunswick, and Prince Edward Island—are called the *Maritime Provinces.*

Quebec and Ontario, once called Lower and Upper Canada, are named the *Central Provinces.*

The three provinces of the great western plains—Manitoba, Saskatchewan, and Alberta—are called the *Prairie Provinces.*

British Columbia, on the western ocean, is the *Pacific Province.*

The Territory of Yukon is named after the great river Yukon, which flows through it into Alaska.

In the far north are the North-West Territories, now divided into the three districts of Mackenzie, Keewatin, and Franklin.

The boundaries of the provinces and territories are indicated clearly by the colours on the map.

It will be noticed that the coast of Labrador, east of the Province of Quebec, belongs to Newfoundland.

EXERCISE 1 (*a*)

1. From the scale of miles on your map of North America, draw a line representing 3,000 miles, marked in 500-mile sections. At the left-hand of the line place a mark for Vancouver, and along the line mark at correct distances from it the cities of Winnipeg, Montreal, and Halifax, with names, and distances between.
2. Write the names of the chief islands in the Arctic Archipelago of Canada. Find out, if you can, which of these have been named after Arctic explorers.
3. If you went by aeroplane from St. John, New Brunswick, to Montreal, a distance of over 350 miles, find on the map what fraction of your journey would be over the State of Maine.
4. Follow on the map the Atlantic and Gulf coast-line from Cape Chidley southwards to St. John, and name in order the chief capes, bays or inlets, river mouths, and islands.
5. Using the scale of miles on the map, find the length and the width of Hudson Bay.
6. Where are the Falls of Niagara in relation to Canada's southern boundary ?

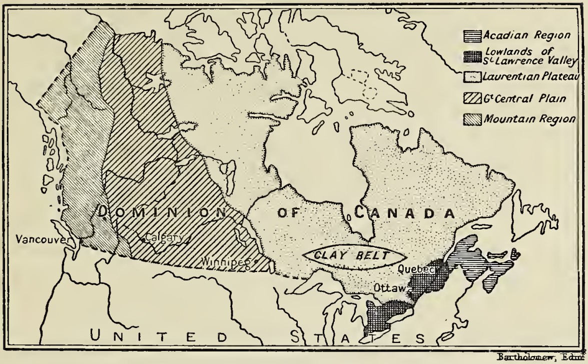
7. If you sail from Toronto to Rochester, how much of your journey will be in Canada ?
8. What American State touches the southern bank of the St. Lawrence, and for how many miles ?
9. Bays and gulfs are in most countries of great value to commerce. To what extent are the bays and gulfs of northern Canada useful in this respect ?

EXERCISE I (*b*)

1. On squared paper (if obtainable), each small square representing 10,000 square miles, shade spaces representing the areas of the nine provinces, as given below :—

	Area in Square Miles
Quebec	707,000
Ontario	407,000
British Columbia	403,000
Alberta	255,000
Manitoba	252,000
Saskatchewan	251,000
New Brunswick	28,000
Nova Scotia	21,000
Prince Edward Island	2,000

2. Which provinces of Canada have water boundaries of great extent ? Which provinces are mainly, or entirely, inland ?
3. Is the name " Prairie Provinces " quite suitable to the three provinces bearing that name ? Are there parts of any of them which are not grass-land ?
4. Find in your history book the dates when the various Canadian provinces became part of the Dominion of Canada.



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NATURAL DIVISIONS OF CANADA.

2. SURFACE: NATURAL DIVISIONS

WE have now to learn something about the surface of Canada, and to see how the various parts of it are suited for human habitation. Such suitability depends very much upon the elevation of the region, and we need at once to know something about the mountains and the plains.

As regards the nature of its surface, Canada may be divided into five distinct regions.

1. The *Acadian Region*, in the east, is so called from *Acadie*, the old French name for Nova Scotia. This region includes the Maritime Provinces and the rougher parts of the Province of Quebec south of the St. Lawrence River. It is really the northern portion of the Appalachian Highland, which runs south-west through the New England States and as far as Alabama. In Canada it is a region of hills and ridges and valleys, with numerous fertile sections of agricultural land.

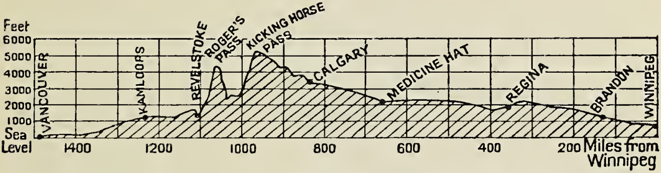
2. The *St. Lawrence Lowlands* lie on both sides of the St. Lawrence River, and in the Province of Ontario extend along Lakes Ontario, Erie, and Huron to Georgian Bay. This region includes some of the finest farm lands in the world.

3. The *Laurentian Region* lies to the north of the Lowlands, and comprises the Labrador Peninsula, the whole area between the Lowlands and Hudson Bay, the northern part of the Province of Ontario down to Lake Superior, and the country to the west of Hudson Bay as far as the chain of northern lakes—the Lake of the Woods, Lake Winnipeg, Lake Athabaska, and the Great Bear and Great Slave Lakes. This region contains more than half the area of all Canada. It is sometimes called the Laurentian Highland, or the Laurentian Plateau, but only in the Province of Quebec does the surface reach the height of 2,000 feet. The part west and south of Hudson Bay is low ground, none of it being so high as what is called the plain region of the west. The soil is rocky, with many rivers and small lakes, and only occasional light timber. South of James Bay, however, in the *Great Clay Belt*, the rock is covered by a more fertile soil, which bears a larger growth of timber, and this will one day become good agricultural land.

Some recent geographers call the Laurentian Highland "The Canadian Shield." The name is not a good one, as the region has only a faint resemblance to a shield, and the boss of the shield, which should be the highest part of it, is represented by Hudson Bay, which is, of course, the lowest part.

4. The *Great Central Plain* extends westwards from the Laurentian region to the foothills of the Rocky Mountains. There is a general rise from east to west, and the plain really consists of three levels, or plateaus, rising from below 1,000 feet in Manitoba to 3,000 feet in Alberta. Over all this plain

there is a deep fertile soil, with no rock near the surface. This is the great Prairie Region of Canada. The southern part of it, in those sections which have not yet become farm lands, is mostly covered with grass and wild flowers, trees being found only near the river courses. The northern part is covered with forest, excepting in the sub-Arctic regions. This " Great Central Plain " really extends from the international boundary to the Arctic Ocean.



PROFILE OF WESTERN CANADA, SHOWING THE ELEVATION OF THE CANADIAN PACIFIC RAILWAY.

(The distances are measured along the railway, not in a straight line.)

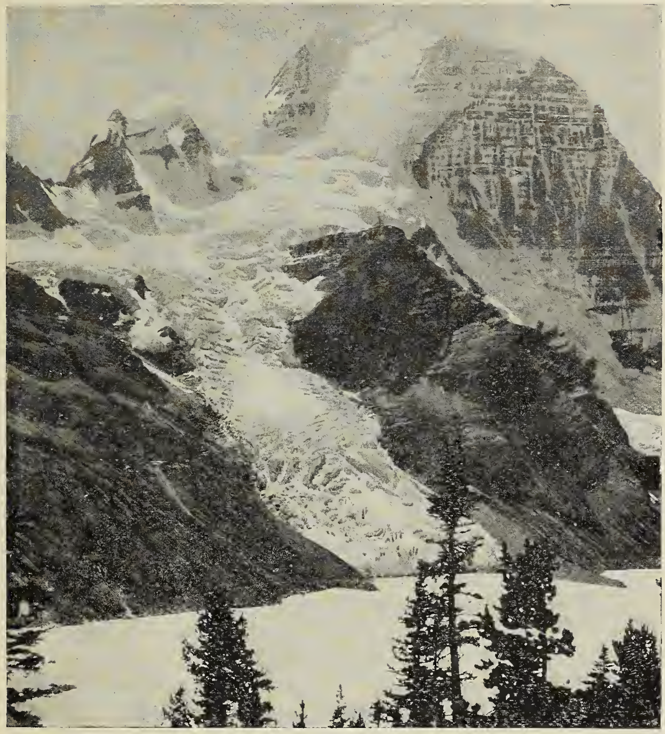
5. The *Great Mountain Region* begins with the Rocky Mountain ridge, and extends to the Pacific coast. The surface consists of a number of parallel ridges of lofty mountains, with deep river valleys or narrow plains lying between. This region has also been called the *Cordillera of Canada,* as it is a part of the great Cordillera of North America, extending south as far as Central America. We shall study in more detail the physical aspects of this wonderful region in Part III. of this book.

EXERCISE 2

1. Which province of Canada has boundaries entirely natural or physical ?
2. Which province has a natural boundary with the exception of a very few miles ?
3. Why should southern Ontario be classed as a part of the St. Lawrence lowlands, when the head of the St. Lawrence River is near Kingston ?
4. In popular language the word "Laurentian," derived from St. Lawrence, is applied to the highland district north of the great river. How far have the geographers now extended the application of the term ?
5. Although the "Canadian Shield" covers more than half of Canada, there is not one city in all that vast expanse : can you explain why ?
6. The elevation above sea-level of a few of the western cities is as follows :—Winnipeg, 757 feet ; Brandon, 1,255 ; Moose Jaw, 1,767 ; Regina, 1,885 ; Medicine Hat, 2,171 ; Calgary, 3,428. See if you can find to which of the three levels of the Great Central Plain each belongs.
7. The term "Cordillera" comes from a Spanish word meaning "a small cord," and is applied to parallel ranges of mountains. Does the map indicate the presence of such mountains in British Columbia ?

3. MOUNTAIN SYSTEMS

In a country as large as Canada there are, of course, great variations in the elevation of the land, as we have already seen. But Canada, as a whole, is not a mountainous country. The higher parts of the Great Central Plain, as stated in the last



GHOST GLACIER AND LAKE.
(By courtesy of the Department of Natural Resources.)

chapter, are not reached by steep ascents but by gradual slopes. The only region of Canada which is really mountainous is the great mountain region in the west.

The Rocky Mountains of British Columbia are, as you can learn from the map, a part of the great chain which runs from Alaska throughout the whole length of North America. Of that chain a section of 760 miles in length is in Canada. West of the Rockies in British Columbia runs the Selkirk Range, which is not quite continuous like the Rockies, but is broken up into several minor ranges. Lower than the Rockies and the Selkirks, averaging about 6,000 feet in height, is the Coast Range, a hundred miles wide, running parallel with the Pacific Coast.

Among the Rockies and the Selkirks of British Columbia may be viewed some of the grandest scenery in the world. Most of the mountains are forest-clad below, and on hundreds of peaks, the rock above, bare of trees, is white with perpetual snow. The loftiest of these peaks is Mount Robson, 13,700 feet above sea-level. Among other peaks rising above 10,000 feet are Cathedral Mount and Mounts Stephen and Sir Donald. Many peaks of the Selkirks, too, such as Mount Nelson, are over 10,000 feet in height. A great many peaks on the Alberta side of the Rockies rise above the same level. Nearly a hundred peaks in the two provinces, 10,000 feet or more in height, have been named.

The highest peak in Canada is Mount Logan in Yukon, 19,514 feet high. Its near neighbour, Mount St. Elias, on the boundary of Alaska, is 18,024 feet high.

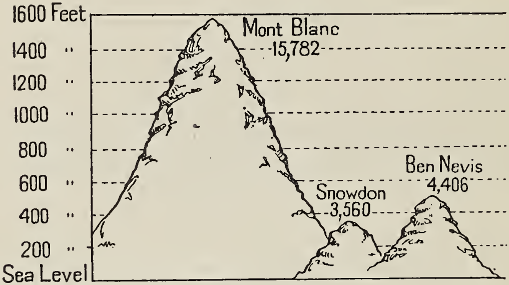
The highest peaks in the other provinces are low in comparison with those of the west. In New Brunswick, Mount Carleton is 2,716 feet above sea-level. In Quebec, Mount Logan, in the county of Matane, is 3,708 feet high. In Ontario, Tip-top-hill, Thunder Bay, is 2,120 feet high.

MOUNT ROBSON, THE HIGHEST PEAK OF THE ROCKY MOUNTAINS.

EXERCISE 3

1. What is the highest hill you have seen? How high is it? What is the highest point in your province?
2. What is meant by a relief map? Does it give a true representation of elevation?
3. What is a glacier? Where are there any glaciers in Canada? (See illustration on page 17.)
4. What is a plateau? Tell where there are any plateaus in Canada.
5. West of the Coast Range in British Columbia there is another ridge which has mostly sunk beneath the ocean. Which Canadian islands represent parts of this "drowned" range?

6. Here is a diagram showing an easy method of comparing the heights of mountains. Draw a similar diagram, extending it as may be required to compare these peaks:—Mt. St. Elias (Alaska), 18,024; Mt. Vancouver (Alaska), 15,666; Mt. Sir Donald, 10,808; Mt. Logan (Quebec), 3,708. Also add names of two or three other peaks in Canada, the heights of which you may be able to find.



COMPARATIVE HEIGHTS OF MOUNTAINS.

7. Explain why in a mountain range the passes are of more importance than the peaks. Find on the map the various passes in the Rockies through which the railways go.
8. What is meant by a "mountaineer"? How does he differ from a "mountain-climber"? See if you can get any information about "The Alpine Club of Canada."
9. Make a diagram, similar to that in No. 6, and on it show the heights of the following peaks:—Mt. McKinley (Alaska), 20,464, the highest peak in North America; Aconcagua (Argentina), 23,080, the highest peak in South America; Mt. Everest, in the Himalayas, 29,002, the highest peak in the world. Try to find out something about the attempts which have been made to reach the top of Mt. Everest.

4. RIVERS AND LAKES

No other country has so extensive and so varied a system of rivers and lakes as Canada. More than half of all the fresh water of the world lies within or along her borders, and more than three per cent. of the area of all Canada is water.

The development of Canada owes nearly everything to her rivers and lakes. For two centuries or more the St. Lawrence and its tributaries were the chief means of approach for the explorers, both French and English. To-day the great waterways of Canada are, for eight months of the year, among the chief routes of commerce.

The chief river of Canada is the St. Lawrence. The whole system of the chain of Great Lakes from Port Arthur to Belle Isle (2,264 miles) is really one great river system.

The magnitude of the St. Lawrence can be appreciated only by those who have travelled from Montreal to Europe. One hundred and fifty miles above the beginning of its estuary the river is twenty miles wide. For two days after leaving port you can see one or both banks of the mighty river, the estuary of which is ninety miles across.

The Atlantic tides go up far beyond Quebec, registering in that city a rise and fall of sixteen feet or more. When the tide is going out the river flows eight miles an hour.

In studying the river systems of the western provinces, it will be best for you to trace the courses of the rivers on your map. The Mackenzie River system, in the north-west of Canada, is longer than that of the St. Lawrence if we include its great tributaries, the Peace River and the Athabaska River. Like the St. Lawrence, it drains a series of great lakes. It is so far north that it is navigable for less than half the year.

A third vast river system, also belonging to the Great

Central Plain, is the Saskatchewan-Nelson system. The Saskatchewan is a mighty stream, which rises in two heads amid the Rockies. Each current flows eastward for more than 800 miles before coming together near Prince Albert. Thence the united streams flow eastward into Lake Winnipeg. The river is navigable for steamers of light draught from its mouth to Edmonton, on its north branch.

Lake Winnipeg is fed from two other sources—by the Red River, which rises in Minnesota, and is joined at Winnipeg by the Assiniboine; and by the Winnipeg River, flowing in from the south-east. The lake is drained by the Nelson River, issuing from its north-east corner, and flowing thence northwards and then north-east for 390 miles into Hudson Bay.

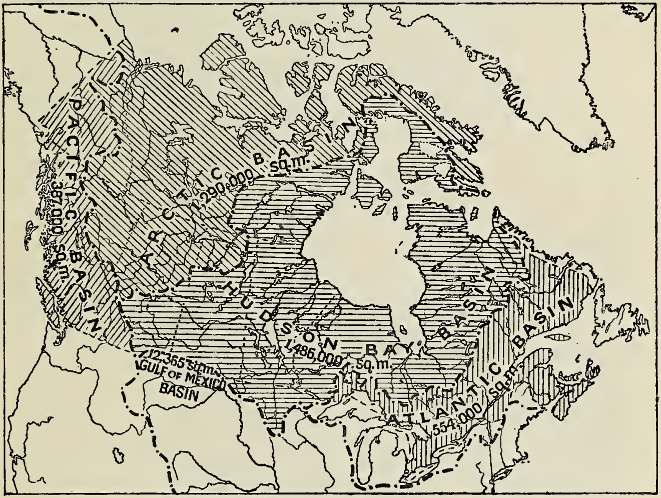
The Churchill River with its chain of lakes, running through northern Alberta, Saskatchewan, and Manitoba for 1,000 miles, must have separate mention. Its head is near Athabaska Landing, and the river enters Hudson Bay near Fort Churchill.

The rivers flowing westward from the Rockies are shorter than those flowing eastward. Many of them, however, such as the Fraser and the Columbia, have their courses lengthened by being obliged to zig-zag down one valley and then down another toward the coast. We shall again study these rivers in dealing with British Columbia.

You should now learn more about the lakes of Canada, into which, or from which, most of her rivers flow. The most important of these lakes are known as the Great Lakes, which belong in part, it must be remembered, to the United States.

Lake Superior is the largest of the Great Lakes, and indeed the largest body of fresh water in the world. Its waters are deep, and its waves in a storm are as big and as fierce as those of the Atlantic. The autumn storms are often dangerous, and wrecks are very frequent. So large is Lake Superior that if you paddled around its shore-line in a canoe at the rate of twenty-five miles a day, it would take you seventy days to come back to your starting-point. Some of the cliffs on the north shore rise to the height of 1,000 feet.

Second in size among the Great Lakes is Lake Huron. It is connected with Lake Superior, as you will see, by the St. Mary River. The beautiful Georgian Bay is the north-east division of Lake Huron.



THE DRAINAGE BASINS OF CANADA.

The waters of the little Lake St. Clair flow into it from Lake Huron by the St. Clair River, and flow out of it by the Detroit River into Lake Erie.

Lake Erie is the shallowest of the Great Lakes. Its chief harbours are on the south shore, in the United States. Its commercial value to Canada is mainly due to its use as a waterway and as a great reservoir for the Welland Canal, and for the waters which produce electrical energy in the region of Niagara Falls.

The most easterly, and the smallest of the Great Lakes, is Lake Ontario. Into it flow the waters of the Niagara River, and out of it, on the east, flow the waters of the St. Lawrence. It was on this lake, in 1817, that the first lake steamboat in Canada plied.

Of the lakes of western Canada, Lake Winnipeg has already been mentioned. It receives its waters from east and south and west, draining the whole of the southern portion of the three Prairie Provinces and also the extreme western section of Ontario. It is nearly all that is left of that old glacial lake named "Agassiz," which once covered an extensive area in Manitoba and the adjoining section of the United States.

In the Mackenzie River system there are three huge lakes —Lake Athabaska, the Great Slave Lake, and the Great Bear Lake. The last is so far north that its waters are in some years frozen for nine months out of the twelve.

EXERCISE 4 (*a*)

1. What is meant by a "watershed"? Find on the map the situation of any important watershed in Canada.
2. Can you find any place in Canada where a local thunderstorm might send part of its water to the Atlantic and part to Hudson Bay?
3. Can you find a place in western Canada where such a storm might send part of its water to Hudson Bay and part to the Arctic Ocean by way of the Mackenzie River?
4. Name the rivers of Canada which flow through three provinces.
5. There was a time, not very long ago, when travellers regretted the existence of so many rapids in our rivers. Why do

A SUMMER CAMP IN ONTARIO.

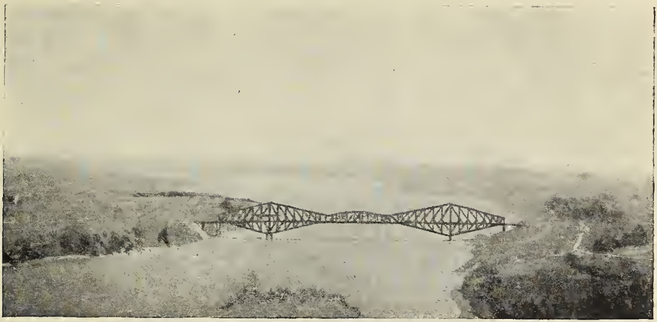
(*C. W. Jefferys.*)

people now congratulate Canada on the possession of these numerous rapids ?

6. Although navigation on the St. Lawrence closes at the beginning of December, the river below Quebec is not frozen. Why is it not frozen ? Why do ships not leave Quebec for Europe during the winter months ?
7. Draw to a uniform scale, 500 miles to the inch, lines showing the comparative length of these rivers :—St. John, 390 miles ; St. Lawrence, 1,900 ; Ottawa, 685 ; Nelson, to Lake Winnipeg, 390 ; Saskatchewan, 1,205 ; Churchill, 1,000 ; Columbia (total length, including part in United States), 1,150 ; Fraser, 695 ; Mackenzie, 2,525 ; Peace, 1,065.

EXERCISE 4 (*b*)

1. Which of the Great Lakes is entirely in the United States ?
2. How did the name " Superior " come to be applied to the largest of the Great Lakes ?
3. Why are there no lakes of any considerable size in the Maritime Provinces ?
4. Which Canadian lake has the largest number of towns and cities on its shores ? Can you explain the reason of this ?
5. Why are there no cities or large towns on any of the lakes of the Prairie Provinces ?
6. Show on squared paper (if obtainable) the comparative areas of the Great Lakes, each small square representing 1,000 square miles—Superior, 31,800 square miles ; Michigan, 22,400 ; Huron, 23,010 ; Erie, 9,940 ; Ontario, 7,540.
7. Make a similar diagram to show the areas of the western lakes—Winnipeg, 9,459 square miles ; Athabaska, 2,850 ; Great Slave, 10,719 ; Great Bear, 11,821.
8. Find out from the map any rivers which cross the international boundary, and say in which direction they flow.



ST. LAWRENCE VALLEY AND QUEBEC BRIDGE.
(*Copyright of the Fairchild Aerial Surveys Company.*)

5. PLAINS AND VALLEYS

An extended tract of country which is comparatively flat is called a *Plain*. We must, however, remember that height above sea-level will not help us to determine whether any particular area is a plain or not. The greatest plain in Canada —the Great Central Plain—has three levels rising above one another as you go from east to west. Winnipeg, on the first level, is only 750 feet above sea-level; Calgary, on the third level, is 3,400 feet above sea-level. Yet both cities are in the same Great Central Plain.

In eastern Canada, Three Rivers is less than 100 feet above sea-level; St. Thomas, near Lake Erie, is 750 feet above sea-level. Yet both these places are in the region called the St. Lawrence Lowlands.

A certain area is a plain, therefore, only in relation to its surroundings and not in relation to sea-level. Indeed, there are many vast reaches of level or gently sloping lands in British

MAKING A PORTAGE.
(*W. H. C. Groome.*)

Columbia between the parallel ranges of mountains, such as the great tract between the Selkirks and the Coast Range. But such high plains are usually called *plateaus*.

A *valley* may be defined as a depression of land, having considerable width, through which a stream or river usually flows. As only those valleys which are fertile—and thus invite man to occupy them—have received special names, the term valley is scarcely ever used of a tract which is barren.

VALLEY IN THE EASTERN TOWNSHIPS, QUEBEC.
(*By courtesy of the Department of Natural Resources.*)

A few of the best known valleys of Canada deserve special mention. The St. Lawrence Valley, once an old sea-bed, begins near Quebec city and runs west as far as Kingston.

A large proportion of the population of French Canada live in that fertile belt, which slopes towards both banks of the great river. Of the Ottawa Valley you hear most frequently in connection with the lumber industry. (See Lesson 12.) The Annapolis Valley in Nova Scotia has earned its fame mainly in connection with its splendid orchards. The Red River Valley and the Saskatchewan Valley are known throughout the world because of their marvellous yields of wheat. The Peace River Valley, once thought useless for agriculture, is now one of the most promising agricultural regions of the West.

In Saskatchewan and Alberta can be seen those strange little valleys which are called *coulées*. Many of them are two or three miles broad and several hundred feet below the level of the surrounding prairie. Long ago a great river wore away the soil and formed these hollows, but the river has now dwindled to a mere trickling stream.

EXERCISE 5

1. Ontario possesses two great plains—one north of Lake Ontario, and the other between Lakes Erie and Huron. Toronto, in the first plain, is only 250 feet above sea-level; while London, in the second, is 800 feet above.
    - (*a*) Why has the higher of these two plains been called "The Garden of Canada"?
    - (*b*) What name is given to the elevation of land which separates these two plains?
    - (*c*) Why would you not call either of these two plains plateaus?
2. If a lake is drained, or dries up, its bottom forms a flat surface called *a lake plain*. Where in Canada can you find such a plain?

3. Plains are the most densely populated regions of the earth. For this there are many reasons. Which of the following reasons would explain the rush of settlers towards the Great Central Plain of Canada?—
   - (*a*) Plains are flat and the soil is in no danger of washing away.
   - (*b*) They are usually formed of sediment, and are therefore very fertile.
   - (*c*) Roads and railways are easily made over plains.
   - (*d*) The rivers that flow through plains have few rapids and falls, and are often navigable.
4. There are thousands of square miles of land about Hudson Bay not over 500 feet above sea-level. Through this region flow the great rivers Churchill, Nelson, and Moose. To what extent, if any, are the terms plain and valley applicable to these northern areas?

6. RAINFALL

We will now consider how all our rivers and lakes get their supply of water. You know that all the fresh water comes from the clouds, as rain or as snow. You also know that a cloud is a partially condensed form of the vapour which the heat of the sun has caused to rise from the surface of the seas and lakes and rivers.

Clouds are carried by the wind; and the fall of rain at any place, therefore, must depend upon the winds which prevail. If these winds come from the ocean they will be full of moisture, especially if the water over which they blow is warm. If they come from a great land area, they will bring but little moisture, especially if they are cold winds.

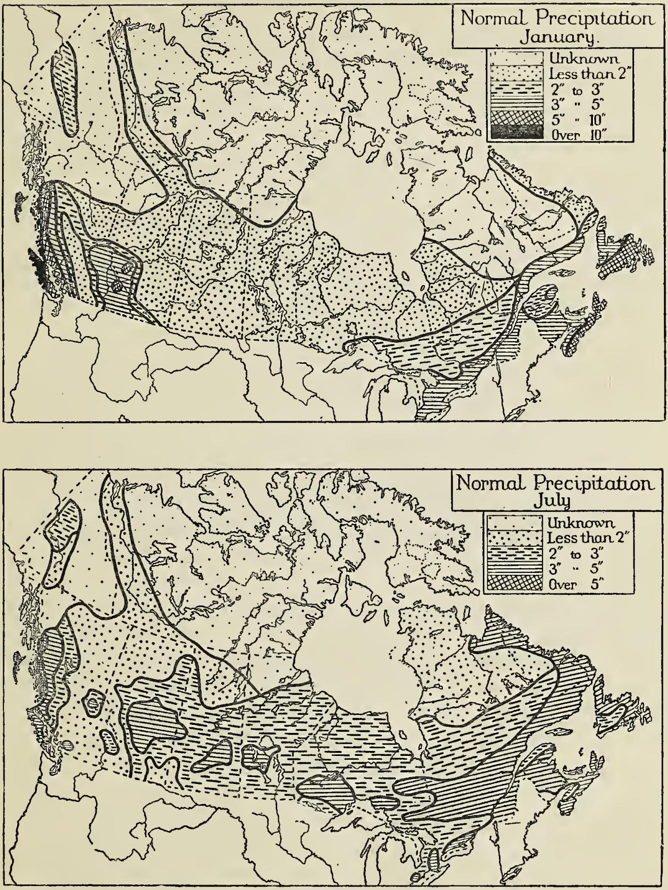
Canada may get rain either from the Atlantic, or from the Pacific, or from the Arctic, or even from the Gulf of Mexico.

Study a rainfall map of Canada, or of North America, and see how each of the oceans supplies the part of the Dominion near it. The figures on the map show the rainfall in inches. Where you see 30 marked, it means that if all the rain and snow which falls on that part in a year were to remain on the surface where it falls, the ground would be covered with water 30 inches, or 2½ feet, deep. (Ten inches of snow, if melted, will produce about one inch of water.)

Look first at the western mountain region on the Pacific coast. Here the winds come from a wide ocean area, and owing to a warm current—the Kuro Sivo or Japan Current—the sea water is also comparatively warm. So the winds are full of moisture, most of it invisible. When the winds reach the coast, they must rise to a high level to cross the coast range. The high levels of the atmosphere are always cold, and so the warm, moist air is chilled as it rises. Its moisture now becomes visible as clouds, and then it is further condensed, and falls as rain. This will explain to you the large numbers marked on the rainfall map for this region—60, 80, or 100 inches, and even more in places.

Having passed over the coast range, the air flows down to the plateau and valley region, and in doing so becomes warmer. It has lost much of its moisture already, and by the warmth the remainder is again turned into the form of invisible vapour. So the wind is now a warm, dry wind, and in this region the rainfall is only 20 inches or less.

But again the air current must rise to cross the lofty Selkirk and Rocky Mountain ridges. Again it is chilled, and rain is deposited to the annual depth of 40 or 50 inches in some places. When, finally, the air current descends to the foothills of the Rockies and to the high plains of Alberta, it has again become a warm, dry wind, which is called the Chinook wind. By the time Calgary is reached, the annual


Normal Precipitation
January.
Unknown
Less than 2″
2″ to 3″
3″ " 5″
5″ " 10″
Over 10″
Normal Precipitation
July
Unknown
Less than 2″
2″ to 3″
3″ " 5″
Over 5″

RAINFALL.

rainfall is less than an average of 20 inches, and near the American border it is usually as low as 10 or 12 inches. The farmers in this dry region must irrigate their fields to get a good yield of crops. Water is conducted from reservoirs, through canals, to the farms in this dry belt. Over a million acres of semi-arid land have now been made fertile by this artificial means.

In this western region it is during winter that the sea winds blow most steadily, and therefore on the higher ground, and especially on the Selkirk and Rocky Mountains, much of the rainfall comes in the form of snow.

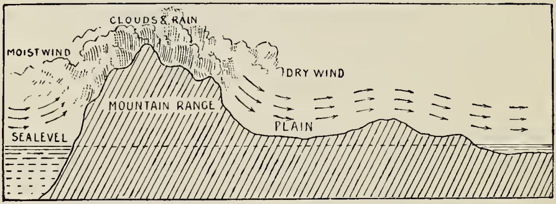


DIAGRAM ILLUSTRATING THE CHINOOK WINDS.

We will now look at the Atlantic coast region. There again you find in the Maritime Provinces and in the eastern parts of Quebec an annual rainfall of 40 to 50 inches, especially near the coast or on the high ground. It gradually becomes less towards the west. In south-western Ontario the soil receives each year from 25 to 35 inches of rain. There is an area near Georgian Bay which is often drenched to the extent of 40 inches. In the Hudson Bay tract and in Northern Quebec there is usually a rainfall of 25 inches. This is also the average for the Fort William district. At Winnipeg the record runs from 20 to 25 inches, and on the prairies of Manitoba and Saskatchewan it becomes even less. However, the warm, moist winds from the Gulf of Mexico often reach this prairie region, and the rain is thus distributed over the spring and summer season, when it is most needed for plant growth. Thus, with only a moderate annual rainfall, crops can be successfully grown without irrigation.

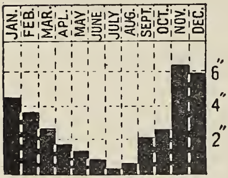
We will look finally at the regions bordering on the Arctic Ocean. Sea winds blow far south up the Mackenzie basin, and bring winter cold, but little moisture either as rain or as snow. In winter the ocean to the north is covered with ice, and even if the water were open, the air is too cold to carry much moisture. Besides this, there are no high mountains in the way to make the wind deposit the little moisture which it may carry. So over this northern region the total fall of rain and snow (if it were melted) is mostly below 10 inches.

Yet in the summer time on those " barrens," as they have been called, grasses and mosses and other hardy plants grow freely. The soil is always frozen in winter, and keeps what water it has until the hot summer sun melts it ; and so there is always enough moisture for the plant life. The same thing happens on the dry western plains farther south. There is always in the spring a store of frozen water a few feet down in the soil. The hot summer sun dries the surface, but it also melts the frozen water below, which then rises through the soil to meet the roots of the growing plants.

EXERCISE 6

1. In your own home district what months are the rainiest? What is the annual rainfall ?
2. Write an essay of twenty lines to explain—(*a*) Why Victoria has four times as much rain as Saskatoon ; (*b*) Why Halifax has twenty inches more rain than Toronto.

3. The dry region to leeward of a mountain range which faces a moist sea wind is said to be in the "rain shadow" of that range. Where can you find rain shadow areas in Canada?



MONTHLY RAINFALL OF VICTORIA.

4. This diagram shows the monthly rainfall at Victoria, B.C., including snowfall reduced to its water equivalent. Draw similar diagrams for the following cities, from the annexed table of monthly rainfall given in inches and decimal parts:—

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Vancouver .	8.56	6.22	4.46	3.09	3.56	2.82	1.33	1.71	4.29	5.69	11.28	7.56
Edmonton .	0.76	0.67	0.67	0.80	1.86	3.26	3.56	2.47	1.40	0.74	0.73	0.75
Winnipeg .	0.82	0.75	1.17	1.54	2.15	3.03	3.25	2.18	2.08	1.36	0.99	0.92
Toronto .	2.87	2.58	2.65	2.40	2.98	2.76	3.04	2.77	3.18	2.46	2.95	2.83
Fredericton .	4.03	5.66	4.72	2.97	3.22	3.71	3.03	3.97	3.54	4.07	4.07	3.45

5. Explain why in the western prairies the snowfall is of more advantage to the farmer than a winter rainfall would be.

6. In the summer of 1924, if the Prairie Provinces had had five inches more of rain between June 15th and August 15th, it is estimated that the wheat crop would have been a hundred million bushels greater than it was. What, then, would have been the probable value of five inches more of rain if wheat sold in the autumn at $1.50 a bushel?

7. In a certain year the snowfall in the Prairie Provinces was five feet, and the total precipitation of snow and rain was 20 inches. How much of the whole precipitation was rain, if snow yields one-tenth of its bulk in water?

8. Rainfall is measured by a rain-gauge. Try to find out what the instrument is like and how it is used. Will the same instrument measure both the rain and the melted snow?

9. See if you can find the cause of local thunderstorms, with their heavy rainfall. Do the prevailing winds produce them?

7. WINTER AND SUMMER

Men can live, in one way or other, in almost any degree of temperature found on the earth's surface, tropical or arctic. The chief importance to us of the temperature of any place is its effect on vegetation, especially on food plants.

People who look only at the temperature map often have very false ideas regarding Canada as a country to live in. Because the winter temperatures on the western plains are low, and frost occurs in many months of the year, people who do not know the country think that life there must be very unpleasant, if not almost impossible. They do not know that the dry atmosphere, clear skies, bright sunshine, and general absence of wind make the climate not only more healthy, but also more enjoyable than that of much warmer places, where winter brings clouds and rain, high winds, and little sunshine.

Moreover, people forget that Canada has many varieties of climate, and that she has a glorious summer, almost tropical, even if her winters in some sections of her vast domain are somewhat rigorous. It is true that the January temperature of Dawson City in Yukon is very severe; but in the very same month Victoria, B.C., is 60° warmer. The temperature of Winnipeg in January is 20° higher than that of Fort Nelson, on Hudson Bay. In the same month the temperature of Toronto is 25° higher than that of the south shore of Hudson Bay.

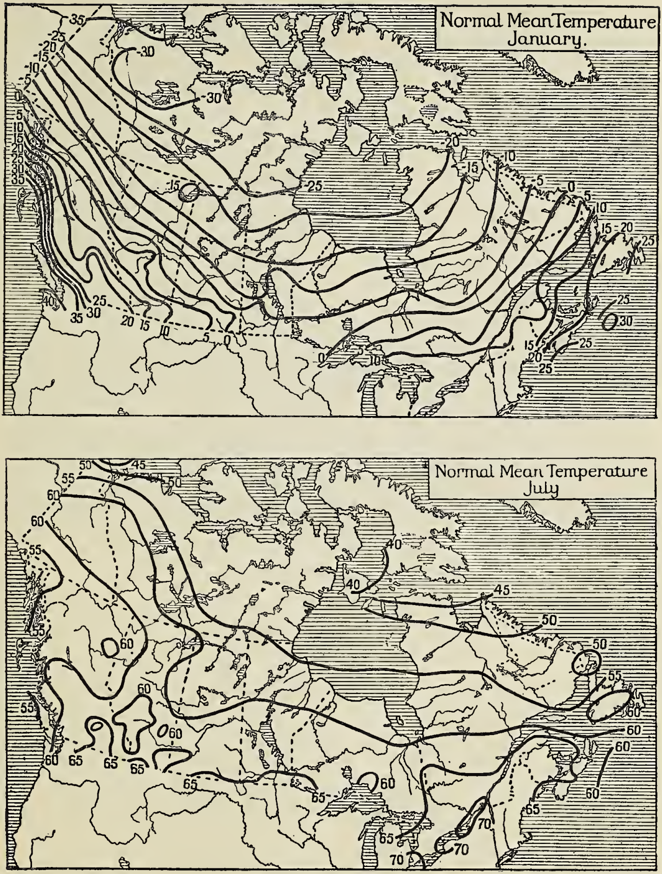
And what about snow? The snowfall is, indeed, as varied as the temperature. In the region north of Montreal and in the Hudson Bay region of Ontario the winter snowfall runs from seven to ten feet, as also in northern New Brunswick. In southern Ontario the snowfall is from five to seven feet, but the frequent thaws often leave the earth bare even in January. In the most south-westerly counties of Ontario the average is two to five feet of snow. In the Prairie Provinces the snowfall is not at all excessive; the record in all three provinces is from 2½ to 5 feet. Great cold, it will thus be seen, is not necessarily accompanied by heavy snowfalls. In British Columbia the snowfall is very heavy on the western slopes of the mountains, but there is an almost complete absence of snow at Vancouver and Victoria.

As for the growing of crops for the support of life, we must remember that the degree of winter cold is of little or no importance. What really counts is the climate during the growing and ripening period of the crops. The winter frost is actually an advantage, for it helps to make the soil fine, and it saves up in the soil a supply of moisture for the seed, since there is no draining away of the winter snowfall till spring has come.

In the north, up to and even within the Arctic Circle, the plant growth gains much from the length of the day in summer. While the sun shines with a less intense heat, it shines for more hours each day the farther north we go. Within the Arctic Circle, indeed, the sun does not set at all for several weeks at midsummer, and plants grow with wonderful rapidity.

EXERCISE 7

1. Study the graph on page 40, which shows the mean temperature for each month, and also for the year, at Port Simpson, on the Pacific Coast, and at Edmonton, east of the Rocky Mountains.
2. Try to find answers to the following questions:—
    (*a*) How does Port Simpson have a higher annual mean temperature than Edmonton, which is farther south?

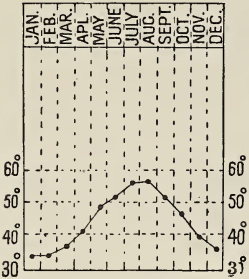


TEMPERATURE.

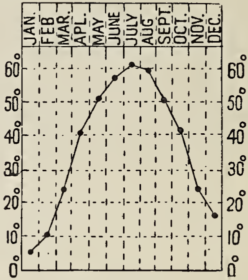
(*b*) Why is the winter temperature lower at Edmonton ?

(*c*) What is the annual range of temperature or difference between the warmest and the coldest month at each town ? Why is it greater at Edmonton ?

(*d*) During how many months of the year is the mean temperature below 32° at each place ?



Port Simpson



Edmonton

3. From the following table construct similar curves for Victoria, Winnipeg, Toronto, Montreal, and Yarmouth, N.S

Mean monthly temperatures.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Victoria . .	39	40	43	48	53	57	60	60	56	50	45	42
Winnipeg . .	−4	−1	15	39	52	63	66	63	54	42	22	7
Toronto . .	22	22	29	41	53	63	68	67	59	47	36	26
Montreal . .	13	14	25	41	53	64	69	66	59	46	33	20
Yarmouth, N.S. .	30	26	32	40	48	55	61	61	56	49	42	31

4. Find out as many reasons as you can for the productiveness of the Mackenzie Valley in spite of its high latitude and its cold winters. What advantages has it over the Territory of Keewatin and over Labrador, in the same latitude ?

DOUGLAS FIRS IN STANLEY PARK, VANCOUVER.
(*By courtesy of the Department of Natural Resources.*)

8. VEGETATION ZONES

THE vegetation of a country, as we have seen, is the most important thing for its inhabitants, since that is the source of their food, either directly or as pasture for their flocks and herds. In any country which cannot produce enough food for its needs the people must depend upon trade with other countries which can produce a surplus.

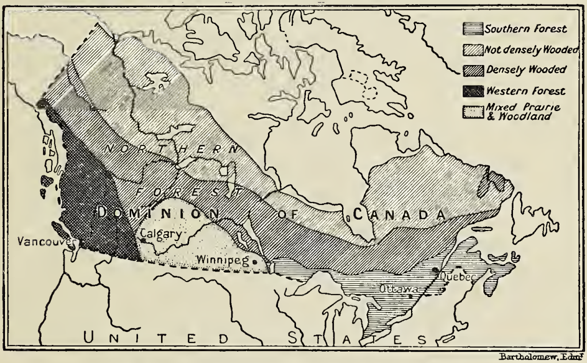
We must first understand what the natural types of vegetation are, or what they were before man began to cultivate the soil. Plant growth depends upon several conditions—chiefly the elevation and slope of the ground, the nature of the soil, the temperature, and the rainfall. So we must recall what we have learned about these in order that we may understand the distribution of natural vegetation in Canada.

Beginning at the north, we have first the Arctic Zone of plant life, which includes the Arctic Archipelago and the so-called "Barren Lands." Its southern boundary on the map would start from the mouth of the Mackenzie River and curve round to the north and east of Great Bear Lake and Great Slave Lake to Fort Churchill. Then after following the coast of Hudson Bay it would cut across the mouth of James Bay and the Labrador peninsula to Ungava Bay, and then down along the Labrador coast as far south as Hamilton Inlet.

If you take 60° or a little farther north as the average latitude of this line, you can see that in the Mackenzie Valley the mild climate drives the boundary of the Arctic Zone far north, while the cold sea winds of Hudson Bay give it a bend south, as also do the winds from the cold Arctic current which washes the Labrador coast.

The vegetation of this Arctic Zone consists mainly of mosses and grasses, with some low-growing dwarf trees in sheltered parts. This vegetation provides food for vast herds of caribou or wild reindeer, and for the musk-ox or Arctic ox. It is believed by recent explorers that a valuable supply of meat could be obtained from these by a system of herding or ranching, as in Alaska, and experiments are being made in Baffin Land and elsewhere with this object in view.

The Arctic region merges gradually into the great Forest Zone of Canada. On the northern border of this zone the timber is small and of little value, but farther south there is a dense forest of evergreen coniferous trees, mainly spruce, pine, and balsam fir. Its southern boundary runs nearly parallel to its northern, already described. In Yukon it starts from about where the Alaskan frontier is cut by the Arctic Circle, and runs south-east, parallel to the Rocky Mountain foothills, to the Edmonton district ; then it bends more easterly to the north of Lake Manitoba, and cutting across Lake Winnipeg, passes to the south of Lake Nipigon and runs eastward a little south of 50°. Finally it crosses the St. Lawrence estuary to include Anticosti Island and part of the Gaspé Peninsula.



Bartholomew, Edinʳ

NATURAL VEGETATION ZONES OF CANADA.

This Forest Belt belongs in its western part to the plain region formerly described, and in its eastern part includes most of the Laurentian region. You know enough about the country already to see that in these two belts, or zones—the Arctic and the Forest—there are no large towns, and there is not much settled land.

South of this Forest Belt the warmer climate produces a different type of vegetation, but there is no longer a continuous zone from east to west. Differences in rainfall and soil serve to divide the southern part of Canada into distinct areas. From the Atlantic coast almost as far west as Winnipeg, there is forest of an open type, largely made up of the deciduous and hardwood trees, such as maple, elm, ash, oak, birch and beech.

This tract of open or hardwood forest includes nearly all the Acadian region, the St. Lawrence lowlands, and the southern fringe of the Laurentian plateau region. It was here that the Indian settlements were chiefly found, with some amount of cultivation, and it was here also that the first white settlements were made. The open spaces, the fertile soil, and the river communications were advantageous for the new inhabitants, and it was therefore in this region that Canada was born.

The most southerly part of this great tract, along the northern shores of Lake Erie and Lake Ontario, belongs to a specially favoured region, sometimes known as "The Fruit Belt of Canada."

West of Winnipeg, extending as far as Calgary and Edmonton, the coniferous forest of the north thins out into the treeless Prairie Region. Here the scanty rainfall is not sufficient for any heavy natural growth, and we find the grassland type of vegetation, formerly the support of vast herds of bison, and a great hunting-ground of the Indians. Trees are found only along the river banks—elm, poplar, spruce, and jack pine.

The western Mountain Region, with its mild and damp climate, has a special forest growth of its own, different from that of the other forest regions. The various mountain ridges differ from one another in rainfall, and their vegetation, therefore, also differs. On the Rocky Mountains the forest is largely coniferous—pine, spruce, fir, and larch. In the Selkirks the chief varieties are red and yellow cedar, hemlock, spruce, and Douglas fir. The Coast Range differs from the others in the luxuriance of its vegetation and the great size of its timber trees, especially red cedar, spruce, and Douglas fir. In the dry belts or valleys between the mountain ranges the vegetation is that of a grass-land area, with open woodlands rather than forest.

EXERCISE 8

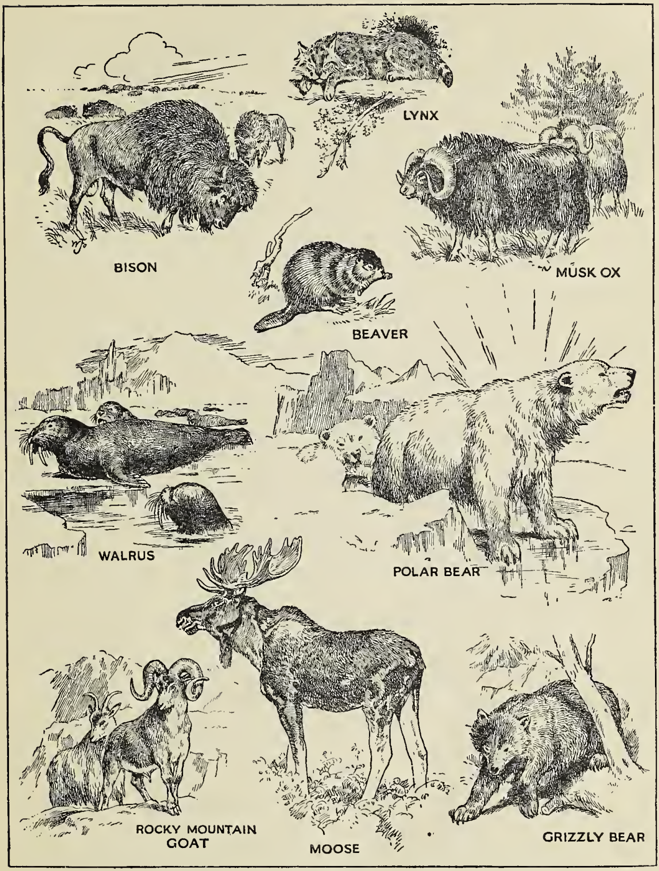
1. Draw a small sketch map of Canada, and on it mark off the regions of vegetation mentioned, shading each differently. Which province includes parts of the largest number of different regions ?
2. Find out as much as you can about recent explorers in the Arctic region, and what they say of its vegetable and animal life. Find out also how so many of the early explorers suffered greatly, and even died of cold, where the Eskimos can live a fairly comfortable life.
3. Explain how dry grass-land areas come to be mixed with forest areas in the mountain region of the west.
4. Make a list of the different kinds of trees you have seen growing in your own district. To what diameter of trunk do the largest grow ? Which of these trees are deciduous and which are coniferous ?
5. Find out where the earliest white settlements were made in Canada, and by whom. Why not on the prairies ?
6. Find out also who were the first explorers of the Prairie region, and where the first permanent settlement was made.
7. Note the difference of rainfall in the three sections of the southern vegetation belt—the St. Lawrence Valley, the prairies, and the mountains. Explain why, in the second of these, trees are mostly confined to the river valleys, while in the third they extend far up the mountain slopes.

9. ANIMAL LIFE

The types of wild animal life found in any country depend upon the food supply, and therefore upon the climate and the vegetation. But when a country becomes the settled home of civilized men, the wild animals are either killed off or driven to the uninhabited parts, while domesticated animals take their place.

Canada before its settlement had an abundance of animal life, especially of the grass-eating types; but it was singularly free from the larger flesh-eating species such as are dangerous to man. The white polar bear in the north, the grizzly bear (still common in the Rockies), the cougar, puma, or mountain lion in the west, and various species of wolves on the plains, were the most formidable, and these are still to be found. The black bear is still common in many parts of Canada, 8,000 of them being killed every year for their pelts. Among the smaller animals, mainly in the Forest Belt, are the wild cat (Canada lynx), wolverine, gopher, coyote, prairie wolf, fox, mink, marten (sable), skunk, and weasel (ermine).

The southern prairies or grass-lands were the home of vast herds of bison, popularly known as buffalo, the main support of the Indians of the plains. These, as wild animals, are now nearly extinct, although a considerable number are still kept in certain Government reserves. The coming of the white man, with the demand for furs and the introduction of horses and of firearms, led to wholesale slaughter such as had not been known in earlier times. In any case, the settlement of the prairies must have driven the bison from their usual haunts. Those in the north, which lived more within the forest area, fared better, and some are still found in the Mackenzie basin.



TYPES OF ANIMAL LIFE IN CANADA.

On the northern plains, or Arctic prairies, as they are sometimes called, there is still a vast number of the wild reindeer, or caribou. These differ from the woodland caribou, and are called the Barren Lands caribou. On these the Eskimos and the Indians of the north depend mainly for their animal food. In the extreme north there are also great herds of the Arctic ox, or musk ox, as it was originally named.

In all the provinces and in Yukon the larger wild animals—moose, elk, and deer of all kinds, and mountain sheep and goats in the west—are strictly protected, as well as the brown and the grizzly bear. Sportsmen must obtain a licence to shoot these, and may do so only at certain seasons and in very small numbers. The shooting of wild birds and fishing in inland waters are also restricted and regulated by law.

Of the smaller wild animals many are flesh-eaters, such as in most other countries are either useless or harmful. But in this matter also the cold winters of Canada are an advantage to its people. The animals are naturally protected against the severe cold by a thick coat of fur, and these furs are of considerable use to man. Even small animals, such as the mink and the sable, yield furs which are of high value, both for warmth and for beauty.

Birds are much affected by the great difference between summer and winter conditions. Whether they depend upon seeds or insects for their living, there is abundance in summer, but scarcity or want in winter. Hence the greater number of species are migrants, especially the larger birds and those which are of value as food, such as ducks and geese. Partridge, plover, snipe, and prairie chicken are only less numerous than ducks and geese. To prevent the extinction of such birds, the Game Laws of the provinces limit the times during which they may be hunted, and the numbers which the sportsman may kill.

The animal life in the inland waters and the surrounding seas is of considerable importance to the people of Canada. This life is mainly of three types—molluscs, such as oysters, and crustaceans, such as lobsters (all usually known as shellfish) ; the fresh-water and salt-water fishes, such as trout and cod ; and the sea mammals, such as the whale, the seal, and the walrus.

These different classes of animals require different conditions of life. The molluscs live in shallow bays and inlets, where the water is quiet ; but as they are attached to the rocks and stones of the sea bottom, there must also be currents in the water to carry their food to them—minute creatures which float in the sea. The crustaceans can move about on the sea floor, and they prefer rocky coasts, where they find shelter among the ledges and hollows of the rocks.

Sea fishes also live mainly on minute living creatures which float in the water. Their favourite haunts are places where the sea is shallow and where ocean currents bring them supplies of food. There are not many areas of this kind known in the world, but two of the best of these are off the coasts of Canada—in the Atlantic, off the shores of Nova Scotia and Newfoundland ; and in the Pacific, off the coast of British Columbia.

The vast network of lakes and rivers which Canada possesses gives her an unequalled supply of fresh-water fish, and also of the various kinds of salmon which live mostly in the sea, but return to the rivers to deposit the spawn from which their young are hatched.

For sea mammals, a favourite resort is the borders of the frozen Arctic seas, where they find abundance of fish for food, and the ice-floes are convenient resting-places for their young, more safe from disturbance than the land would be.

EXERCISE 9

1. Why are not the horse and the cow, the dog and the cat, included among the animals of Canada on page 47 ?
2. The word *Fauna* is often used in books on animals. Can you find exactly what the word means ?
3. Which of the wild animals of Canada supply meat of good quality ?
4. Why is the musk-rat called "a rodent"? Can you name any other rodents ?
5. Find out as much as you can about the wild animal life of the mountain region. Make a list of the animals, and say which of these are flesh-eating.
6. In what parts of Canada are the sea mammals of importance ? How do they differ from fishes ?
7. Make a list of the birds you know that migrate to the Arctic regions in summer. Why do they return from those parts before winter ?
8. Name any animals you know that are destructive or injurious, and may be regarded as pests. Explain what kind of damage is done by each.
9. Mention as many birds as you can which are helpful to the farmer and so ought to be protected ; and explain how they help. Mention also any that are destructive, and what kind of damage they do.

PART II—HUMAN AND INDUSTRIAL CONDITIONS

10. THE FISHING INDUSTRY

Now that we have made a rapid survey of Canada in respect of its natural or physical conditions, we have a still more important survey to make. We must see how the life of the people has been affected by these natural conditions, and what use they make of the gifts with which nature has blessed them.

We shall see how they obtain the first necessaries of life—food and clothing and shelter. We shall also see how the natural resources of the country are being used for the supply of other things which promote the comfort of life or satisfy the natural desires of civilized men. This will embrace the various kinds of Canadian manufactures, and the exchange of Canadian products for those of other lands.

The earliest industry carried on by white men in Canada was fishing. Even before the voyages of Columbus it is probable that fishermen from France had discovered the great Atlantic fishing-grounds off the coasts of Nova Scotia and Newfoundland, the Grand Bank and other shallow waters where shoals of cod were found. The fishing-stations established in the neighbourhood of the Gulf of St. Lawrence were the earliest European settlements in Canada.

The Grand Bank fishing is carried on by the Maritime Provinces, the chief centre for the "bankers" being Lunenburg, Nova Scotia. The vessels engaged are from 40 to 100 tons, and they carry a crew of from twelve to twenty men each. They remain at sea for months at a time, fishing with baited lines, and salting down the fish on board, to be dried later on shore. The inshore fishing is still more important, for seven-eighths of all the fishermen of the Maritime Provinces are engaged within fifteen miles of the shore.

TRAP FISHING IN BRITISH COLUMBIA.
(*By courtesy of the Department of Natural Resources.*)

The inshore fishermen go out in motor-boats or in larger vessels. They take the fish with nets, with hand-lines, or with trawls. The trawl is a long line, sometimes a mile long, fastened to which at every three or four feet are short lines with hooks. The trawl is let down to the bottom, but each end is fastened to a floating keg. The men go along the line frequently to remove the fish and to re-bait the hooks. The day's catch is landed fresh, and then part of it is salted or smoked and dried.

The chief fishes caught on the Atlantic fishing-grounds are cod, halibut, and haddock, which feed near the sea-bottom, and herring and mackerel, which feed near the surface.

SARDINE FISHING, NEW BRUNSWICK.
(*By courtesy of the Department of Natural Resources.*)

The lobster industry of the Maritime Provinces is growing rapidly, and is now the most extensive in the world. There are more than five hundred lobster canneries, which take care each year of sixty million lobsters.

In New Brunswick the canning of sardines is very profitable. These " sardines " are really young herrings, which are cooked in oil and packed in tins.

The most productive fishing-ground of Canada is the shallow waters off the Pacific coast and the numerous inlets and estuaries of British Columbia. Here the chief industry is the catching and canning of different varieties of salmon. These are caught as they ascend the Fraser, the Skeena, and other rivers. During July and early August they move inland in vast shoals to deposit their spawn in the shallow, gravelly pools of the rivers. In their journey up-stream they will leap waterfalls and swim against swift currents to reach the spawning grounds of their desires. The deep red colour of the sockeye salmon and its excellent texture have created a demand for it throughout the whole world.

Of the deep-sea fish on the Pacific coast the most important is the halibut, caught off Vancouver Island and the Queen Charlotte Islands. At Prince Rupert there is an immense storage plant devoted almost exclusively to this kind of fish.

The whale fisheries of Canada deserve mention here. The yearly catch on the Pacific coast sometimes reaches a total of five hundred. Whale-hunting is carried on in fast boats with harpoon-guns. Every scrap of the whale can be used, producing oil, whalebone, and guano, and even salted whale is not unpalatable as a food.

The inland fisheries of Canada are spread widely over the Great Lakes and the countless minor lakes and rivers. The chief fishes caught are whitefish, pickerel, trout, herring, pike, and sturgeon. The fishing season lasts about eight months, but fishing through the ice is becoming very common. In the northern regions of Canada the local fish supply is an important article of diet; nevertheless most of the catch goes to distant markets.

As regards the deep-sea fishing-grounds, we must remember that these are not open to Canadians alone. Newfoundland, with its relatively small population, carries on a cod fishery twice as great as that of Canada, while that of New England and the Middle Atlantic States is much larger still.

The quality of Canadian fish is as remarkable as the quantity. Food fishes improve in proportion to the purity and coldness of the waters in which they live. Accordingly, Canada's waters are an ideal home for fish of all varieties.

Of the sea fishery products, over four-fifths is exported to other countries, two-fifths going southwards to the United States, the West Indies, and Brazil, and more than one-fifth to Great Britain and other parts of the Empire.

The number of men now engaged in the fisheries of Canada is over 50,000 in the sea fisheries and 8,000 in the inland fisheries. The total value of the Canadian fisheries in a good year is sixty million dollars, of which twenty-seven million goes to British Columbia, and fifteen million to Nova Scotia.

The Canadian Government and the different provincial governments have taken steps to prevent the exhaustion of the inland fisheries. The Dominion has about fifty fish-hatcheries in operation, mostly of British Columbia salmon and whitefish. The provincial governments of Ontario, Quebec, Nova Scotia, and New Brunswick have hatcheries of their own for re-stocking the rivers and lakes. The young fish are distributed free to all who apply and are able to show that they have suitable facilities for fish culture.

EXERCISE 10

1. What kinds of fish are caught in the waters nearest your home? What other kinds of fish are used in your home, and from what places do they come?

2. What is meant by "roe" as applied to fishes? What is a commoner word?
3. What is meant by a "school of fishes"?
4. Is the lobster a fish? If not, why do we speak of "lobster fishing"?
5. Do the sardines sold in the shops nearest your home come from New Brunswick? If not, where does the label on the can say they come from?
6. What is meant by "bait-fish"?
7. A million dollars' worth of smelts were sold last year in Canada. Find out what you can about smelts.
8. The salmon of the Restigouche River, N.B., the black bass of the Ontario and Quebec highlands, and the trout of the Nipigon are called "game-fish." Why are they so called?
9. Have you ever read *Captains Courageous*? Who are the people whom Rudyard Kipling describes in this story?

11. THE FUR TRADE

It was the furs of Canada which first led Europeans into the interior of the country. It was the furs also which retarded settlement in the early days. The old French trading companies, which held from their government a monopoly of the fur trade on the St. Lawrence, were bound by their charters to settle colonists in New France, but they did little to carry out this promise. The presence of settlers would drive the fur-bearing animals farther into the forests, and this would make the securing of pelts more difficult. So the fewer the settlements, the better for the fur-trader.

There were two main currents of trade: that by the St. Lawrence, opened up by the French, and that by Hudson Bay, opened up later by the English. After the fall of the French power these two currents remained separate, the St.

Lawrence trade gradually falling into the hands of companies operating from Canada itself, and the Hudson Bay trade remaining a monopoly of the Hudson's Bay Company, with headquarters in London. Between these two there was much rivalry, and at times there were even serious quarrels.

Early in the nineteenth century the Canadian and the English traders united. Soon, however, it became clear that Canada could not remain a waste land for the hunter and the trapper, but must become a land of civilized communities. The northern area might remain much as it had been, but the southern belt had a higher destiny. So in 1859 the monopoly of the Hudson's Bay Company came to an end, although to this day it still remains one of the great commercial companies of the Dominion.

HUDSON'S BAY COMPANY POST AND DOG TRAIN.
(*By courtesy of the Hudson's Bay Company.*)

In the early days the beaver was the most popular fur, and the beaver pelt was taken as the measure of value for all others. By ceaseless hunting and the spread of settlement the beavers were enormously reduced in numbers, and there was a danger of their becoming extinct. In some districts their capture was forbidden by law, and in all others it was strictly regulated. Yet the beaver is still, in respect to the total annual value, near the head of the list of furs, the musk-rat and the white fox alone being higher. The other furs which yield a large revenue are the mink, the sable or marten, and the various species of fox.

Among the provinces, Ontario and Quebec produce about half the total, the larger share belonging to Ontario. Most of the remaining half is divided among the North-West Territories and the northern parts of British Columbia and the Prairie Provinces. The total value of the furs marketed varies greatly from year to year. It is largely a luxury trade, and the price of any kind of fur depends to a great extent upon the fashion of the day.

A recent development of the fur trade is that of fur farming. The high price and the increasing scarcity of the silver-fox and other fur-bearing animals led to experiments in keeping those animals in a half-domesticated state within enclosed spaces. In 1923 there were over a thousand "fox farms" in Canada, about half of which were in Prince Edward Island, mainly for the breeding of the silver-fox. Experiments are now going on in several places in the rearing of raccoon, mink, marten, skunk, musk-rat, and beaver.

Besides the furs retained and manufactured in Canada, the total export (1924) amounted to over 18 million dollars, which is much more than half the value of the fisheries exports. The relative place of the fur industry in Canada, however, is quite insignificant as compared with what it was in the trade of a century ago; to-day it is only one-twenty-seventh of the value of Canada's vast agricultural exports. (See Lesson 13.)

EXERCISE 11

1. What fur-bearing animals are found in the province in which you live ?
2. Why was the beaver once made the emblem of Canada ? Have you ever seen beavers building a dam ? Where in Canada is there a place of historical importance called " Beaver Dams " ? If you can get the book, you should read C. G. D. Roberts' story about beavers, *The House in the Water.*
3. Find out what you can about the work of a trapper in the north or the west of Canada, and write a short account of it.
4. A silver-fox is worth from $150 to $250, the average value being $200. About 5,000 pelts of this fox are sold each year. What sum does this bring to the fur-farmers of Canada ?
5. The pelts of 6,400 black bears are sold in Canada every year at the average price of $10 each. The pelts of 25,000 raccoons are sold annually at the average price of $3.85 each. Which brings the larger return to the trappers ?
6. Turn to the map on page 43, and find out which of the vegetation regions of Canada are richest in fur-bearing animals. In which regions is the fur trade of little or no account ? Explain why.

12. FOREST INDUSTRIES

In the early days of British colonization, both in the United States and in Canada, the great forest wealth of these lands was an encumbrance rather than an advantage. Even in the open hardwood region many trees had to be cut down and the stumps removed before the land could be cultivated. Hence, no doubt, the reason why timber came to be called " lumber," or something to be put out of the way.

But it was not long before the surplus lumber became a source of wealth. In the days of sailing-ships built of wood there was a large export of timber to Europe. The chief source of supply in Canada was the eastern provinces, with their facilities for shipment. The great centre of the lumber industry was the Ottawa valley, which still retains the premier position. The Pacific forest region came later into the industry, but it has now risen into a very important place. After the passing of the wooden ship the demands of other industries continued the expansion of the lumber trade.

LOADING LOGS FROM A SKIDWAY, ONTARIO.
(*By courtesy of the Department of Natural Resources.*)

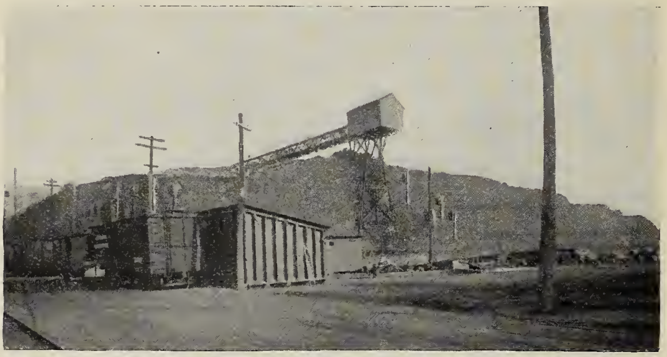
The forests of Canada are estimated at nearly a million square miles, somewhat more than a quarter of its whole area. Nearly half of the timber in this vast area is of marketable size—6 inches in diameter; and about a quarter is "saw timber"—10 inches or more in diameter. Of the area of commercial value more than a third is in the Province of Quebec, Ontario and British Columbia coming next in order. British Columbia, however, stands first in the value of its annual production of lumber, with over one-third of the total for the Dominion, while Ontario and Quebec together account for half.

A RIVER OF LOGS.
(By courtesy of the Canadian National Railways.)

The coniferous or softwood trees provide by far the greatest amount of lumber, spruce, pine, balsam, fir, and hemlock being the most important. Deciduous trees provide less than a tenth of the total, the chief being maple, elm, birch, and basswood.

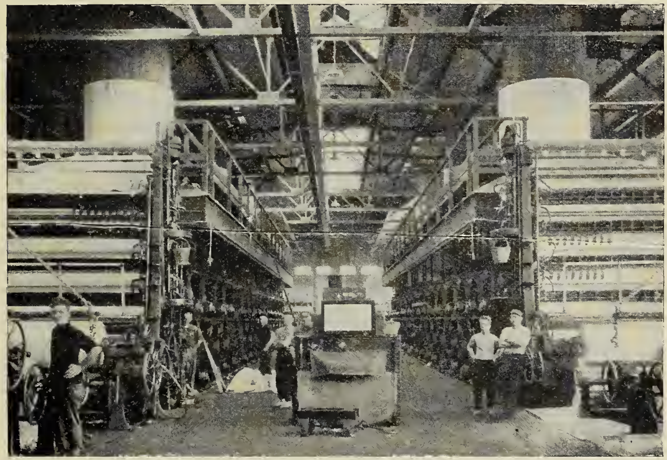
The lumbering industry in the eastern provinces is carried on mainly during the late autumn and the winter months, when the logs can be most easily hauled to the nearest lake or river, or directly to the sawmills. In many places motor-tractors are now taking the place of horses for this purpose. In British Columbia the greater size of the logs, and the comparative scarcity of useful streams, have led to the greater utilization of logging railways and mechanical power, and the work is accordingly carried on throughout most of the year.

Towards the end of last century the use of wood fibre for making paper began a new forest industry in Canada. Paper is a thin sheet of vegetable fibres felted together. The best quality of paper is made from the fibres of the flax plant, from linen rags and the waste from spinning and weaving machines. Cotton and hemp fibres are also used. As more and more paper was needed other plants were tried, and esparto grass was found suitable. Straw fibre can also be used for coarse paper.



A PULPWOOD PILE.
(*By courtesy of the Department of Natural Resources.*)

At last it was found that the fibres of certain kinds of wood could be used, blocks of the wood being ground down into a pulp. Later still, methods were discovered for getting rid of certain substances in the wood which were not wanted, and for separating out the fibres which are required, by treating thin slices of chips of wood with certain chemical substances. This "chemical" pulp is used for fine papers; the "mechanical" or ground pulp soon turns yellow, and finally crumbles away.



A PAPER-MILL.
(By courtesy of the Department of Natural Resources.)

The kinds of wood mostly used for making paper are spruce (the most valuable), balsam fir, hemlock, jack pine, and poplar.

This change in the manufacture of paper was of great importance to Canada. The resources of the country could supply not only the wood required, but also abundant water-power to run the mills and factories for producing the pulp and manufacturing the paper. This industry has now become one of the greatest in the Dominion. The total annual cut of pulpwood in Canada is to-day ten times as great as it was in 1900. In 1923 no less than fifty-seven million dollars' worth of pulpwood was cut.

Of the pulpwood cut, about one-fourth is exported unmanufactured to the United States. The rest is dealt with in the pulp-mills of Canada, where it is made into either mechanical or chemical pulp.

The Province of Quebec produces one-half of the manufactured pulp, being favoured not only by its forest wealth but also by its abundant water-power. Ontario produces about a third of the total. Less than half of the manufactured pulp is exported to other countries, chiefly to the United States.

The greater part of the wood-pulp is made into paper in Canada. The total value of the paper produced is more than double that of the pulp which is used in its manufacture. Of the paper produced in the paper-mills of Canada three-fourths is exported, the United States being the chief purchaser.

Canada suffers great losses every year from forest fires. More timber is thus destroyed than falls before the axe. Towns and villages in the path of the advancing flames are often wiped out and hundreds of lives are lost. Porcupine and Haileybury in Ontario and Fernie in British Columbia have been among the chief sufferers. Since many of the forest fires are due to the carelessness of man—campers, settlers, and railway men—strict regulations are now in force to prevent, as far as possible, these destructive fires.

EXERCISE 12

1. Trees over six inches in diameter are "marketable timber," and those over ten inches are "saw timber." Mention the more common uses of each kind. Explain why smaller sizes can be used for pulp.

2. Find out what you can about the methods of preventing forest fires in your own and other provinces.
3. Name some of the principal kinds of wood used in the building of houses in your home district.
4. What wood is preferred to all other native woods for shingles and for fence-posts, because it is not injured by moisture ?
5. Ontario distributes annually 1,000,000 young trees, Quebec 500,000, and the Prairie Provinces 6,000,000, to all who wish to plant them. Find out all you can about these Government " forest nurseries."
6. See if you can discover what is meant by " forestry " and by " re-forestation."
7. What part do Canadian rivers play in the lumbering and the paper-making industries ?
8. If fire and the axe go on as at present, the great forests of pulpwood in Canada will soon be exhausted. Write a short essay to tell what you think can be done to save the present flourishing paper-making industry of the Dominion.

13. AGRICULTURAL INDUSTRIES

Of the whole area of Canada less than one-fifth is land which may be profitably cultivated. Leaving out of account the area north of latitude 60°—that is, the Territories—we may say that about one-third of the land is at present, or may in the future become, farm land. Of this area only a little more than one-eighth is now actually cultivated. That is, the area at present tilled is only about 4 per cent. of the whole area of the provinces ; but in the future it may be over 30 per cent.

In spite of the small proportion of the arable land which is actually under the plough, agriculture is by far the most important industry in Canada. *Nearly half the people of the Dominion are engaged in some kind of farming or some kind* *of gardening*. The value of Canada's agricultural products is more than three times that of her forest products, including the new developments in pulp and paper manufactures. Besides, with the vast area of land still waiting settlement, that value may be enormously increased. In agriculture, if properly carried on, there is no risk of exhausting the natural resources of a country, but rather the certainty of increasing the value.

There are many kinds of agriculture, but in all of them the people settle down and build houses and villages on or near the place where their food grows. It is only through agriculture that a country acquires a settled population. In primitive types of agriculture the people plant or sow their crop on the same ground year after year until the soil is exhausted of plant food, and will not produce a crop worth growing. Then they take a new piece of ground, and cultivate that in the same way, leaving the first to grow weeds or become forest or jungle again.

In civilized lands the farmer works on a different plan. He changes the kind of crop on each field from year to year. He sometimes allows a field to lie fallow for a time, so as to be able to kill out the weeds. He uses artificial fertilizers to put more plant-food into the soil. He grows certain crops to feed cattle and other animals, and returns the farmyard manure to the land. In these and other ways he treats his fields so that as the years pass he gets heavier crops, and his land becomes more valuable.

You can see that this "mixed farming," as it is called, requires more work than the mere growing of wheat and other grains, and so requires a larger population. The live stock must be attended to all the year round, whereas the wheat or oats require mainly spring and autumn work. Mixed farming is carried on chiefly in the older and more thickly inhabited parts of Canada. Agriculture on the prairies began mainly with wheat growing, but there also mixed farming is now on the increase, and farmers in certain districts are finding that it pays very well.

The chief agricultural product of Canada is wheat. In every province wheat is grown more or less, but the prairies have a soil and a climate specially suitable, and they are the great wheat lands of the Dominion. So much of these prairies has now been brought under cultivation that Canada is the chief wheat-exporting country of the world. More than five-sixths of the wheat area of Canada is in the Prairie Provinces. The annual export of wheat and flour is valued at over 300 million dollars. That great total will be surpassed when more and more land is tilled, when the Athabaska and Peace River districts increase their output, and when the great Clay Belt comes under cultivation.

LOADING HAY.
(By courtesy of the Department of Agriculture, Ontario.)

In the mixed farming area the most valuable products are those of the dairy ; and along with these we may take bacon and hams, as pig-feeding is an economical way of using the waste products of the dairy. By the establishment of creameries and cheese factories, and by improving the breed of dairy cows, the annual export of dairy products has risen to over 50 million dollars, not including the amount used in Canada itself. In this form of agricultural industry the Province of Ontario stands easily first, with more than half the total product of the Dominion.

A third form of agricultural industry is fruit culture. All the fruits in common use are produced by trees of the broad-leaved deciduous type ; and, as you already know, this type of tree has its natural home in the St. Lawrence lowland region, and also to some extent in the Acadian region and in the valleys of the western mountain region. Accordingly, the principal fruit-growing areas are (1) the fertile valleys of Nova Scotia and New Brunswick ; (2) the southern part of Quebec and Ontario ; and (3) the dry valleys of southern British Columbia, where irrigation is often needed.

Much progress has been made in fruit culture in recent years. Attention is given to selecting the best type of trees, to protecting the trees from insects and other pests, and to marketing the fruit to the best advantage. Only the less perishable kinds of fruit, such as apples, are sent overseas in large quantities. Of these, 1½ million barrels, worth 6½ million dollars, are exported annually. Ontario produces about half of this quantity, and Nova Scotia about a third. Dried, preserved, and canned fruits are also exported to the value of about 1½ million dollars.

Horse and cattle rearing is also an important branch of Canadian agriculture, and the annual export of cattle is valued at over 12 million dollars. Towards the end of last century

A PRAIRIE TOWN.
(C. W. Jefferys.)

great cattle and horse ranches occupied a large part of southern Alberta. Much of this region is now divided into farms, with irrigation canals supplying water to the dry areas. Nevertheless Alberta is still one of the chief stock-rearing parts of the Dominion

EXERCISE 13

1. On squared paper (if obtainable), each small square representing 100,000 acres, shade spaces representing the crop areas of all the provinces in which such areas are above a million acres—namely :—

New Brunswick	1,205,000	acres
Quebec	7,435,000	,,
Ontario	10,258,000	,,
Manitoba	6,747,000	,,
Saskatchewan	19,833,000	,,
Alberta	10,005,000	,,

2. From recent returns it appears that in Saskatchewan the average yield of wheat was about 12 bushels to the acre, while in the older provinces it varied from 16 to 20 bushels. Try to find out some reasons for this which may be due to (1) the climate, (2) the system of farming.
3. The Dominion Government carries on more than thirty experimental farms in all the provinces, and there are agricultural colleges in most of the provinces. Find out, as far as you can, some of the uses of these, and why they are important.
4. Make a list of (1) the kinds of grain grown on your farm or the nearest farm, (2) the kinds of roots, (3) the kinds of fruits, (4) the kinds of cattle.
5. In 1923 the total value of the products of Canadian farms reached the total of $1,342,000,000. If there are 9,000,000 people in Canada, and the money were evenly distributed, how much would there be for every man, woman, and child ?

6. In 1872 Canada grew only 20 million bushels of wheat. In 1922 she grew 400 million bushels. Can you give some of the reasons for the wonderful increase in these fifty years? Is the increase likely to continue? Why?
7. In 1922 the farmers of Ontario grew 20 million bushels of wheat, while the farmers of Saskatchewan grew 250 million bushels. Draw a square of five inches to the side, and divide it into twenty-five small squares. If the large square represents the yield of wheat in Saskatchewan, shade off as many squares as will represent the yield of wheat in Ontario.
8. From a study of the map, say what advantages southern Ontario has over British Columbia for the marketing of soft fruits.
9. On many prairie farms canned or preserved milk and butter are used. Explain how this is necessary on a farm.

14. MINING INDUSTRIES

In our modern life the minerals of a country are of great importance. Certain mineral products, even in a raw state, may become necessaries of life, such as stone or clay to build houses, and coal, oil, or gas to keep them warm.

Metal was first employed to make tools and implements and weapons, such as hammers or knives or spears, which were all used by hand. But in civilized life the part played by mineral products is varied and far-reaching beyond our power of calculation. We may say that it is the use of metals and other mineral substances which marks most clearly the difference between savage and civilized life.

Canada possesses great stores of minerals, which no man can begin to value. All the principal metals are found in the Dominion, with the one exception of tin. Every year surprising discoveries are made, causing us to believe that Canada will soon lead the world in mining. It must be remembered that the wonderful gold mines of Porcupine were only recently discovered, and the great silver mines of Cobalt are not very old. Nine-tenths of all the nickel in the world comes from Ontario. In the unexplored regions of Northern Ontario and of British Columbia are hidden, without doubt, precious ores in abundance, which will one day come to light.

In the annual value of their products the mining industries of Canada now rank third, agriculture being first, and forestry second.

Mineral products are usually divided into three classes—metallic, such as gold and iron; non-metallic, such as coal and salt; and structural materials, such as brick and cement. Of these, the second, or non-metallic group, is at present the most valuable in Canada.

Coal is the most important mineral product. The chief coalfields, in the order of the amount of their output, are: (1) in Alberta, with an annual average of 6¾ million tons; (2) in Nova Scotia, with 6½ million tons; (3) in British Columbia and Yukon, with 3 million tons.

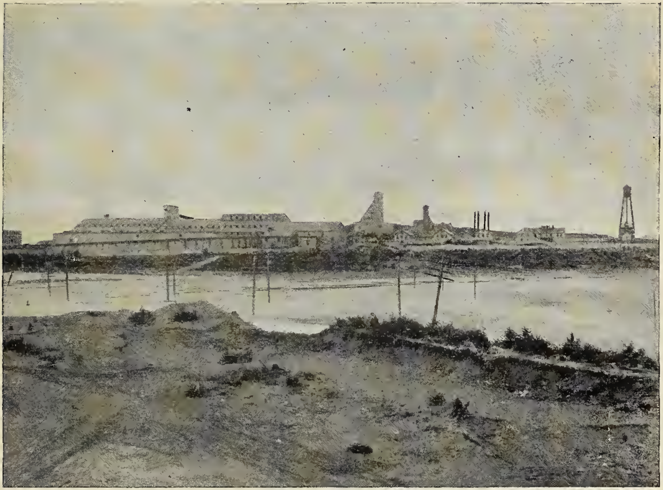
Ontario and Quebec are supplied with coal mainly from the United States, for at present the Dominion supplies less than half of her own needs. Steps are now being taken by the federal and provinical governments to aid in the transport of Alberta coal eastward, and of Nova Scotia coal westward, to supply the needs of Ontario and Quebec.

Asbestos is the next in importance among Canada's non-metallic products, for Canada produces more than any other country. Indeed, her present record is 66 per cent. of the world's output. The Eastern Townships of Quebec yield nearly all this asbestos.

Natural gas and oil are found in paying quantities in New Brunswick, in Western Ontario, and in Alberta.

About 200,000 tons of salt are produced each year from salt deposits near Windsor, Ontario.

Of the metallic products, gold is much the most important, with a total annual value of 26 million dollars, silver coming second, with a total of 12 million dollars; next to these rank nickel, lead, copper, zinc, and cobalt. The Sudbury nickel region of Ontario yields more than 90 per cent. of the world's supply. The greater part of the world's cobalt during the last twenty years has also come from the mines of Ontario. The new mining region of Northern Ontario is the great source of supply for all these metals.



AN ONTARIO GOLD MINE.
(By courtesy of the Canadian Pacific Railway.)

Iron ore is widely distributed in Canada, but most of the ore used in the mills of the Dominion comes from the Mesaba ridge in Minnesota, or from Wabana, Newfoundland. The reserves of iron ore in Newfoundland are the largest in the world. About a million tons a year are shipped to Nova Scotia for use in the steel mills of that province, and an equal amount is shipped to Europe. It is calculated that three thousand years hence men will still be digging out iron ore at Wabana.

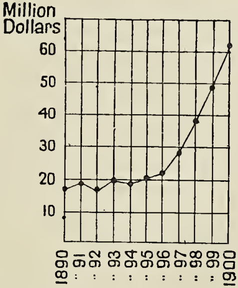
Gold is found in several districts. Fifty years ago British Columbia had its "gold rush," and twenty-five years ago Yukon was the centre of excitement and activity. Now it is the Porcupine area in north-western Ontario which is the great gold-producing district. In the two former districts the gold was mostly found in deposits of river gravel, and the miner depended on his pick and shovel. In Ontario the gold is found in lodes or seams in the ancient rocks, and expensive machinery is required to bring up the ore, to crush it, and to separate out the gold. The "placer mining" of the earlier days in Canada was an adventure; the modern lode mining is, in the case of the principal mines, a settled industry.

Of the third class of mineral products, the most important are cement and various sorts of bricks and tiles.

EXERCISE 14

1. What are the chief metals and non-metallic minerals found in your own province?
2. What is meant by "smelting"? Try to find where in Canada smelting is done.
3. Have you ever seen zinc? Try to find some of its uses.
4. Why are brass and bronze not mentioned in the list of metals found in Canada? What is the difference between brass and bronze?

5. Try to find out some of the uses of nickel.
6. What province of Canada produces the most (*a*) gold, (*b*) silver, (*c*) coal, (*d*) nickel, (*e*) asbestos, (*f*) copper, (*g*) zinc ?
7. What are the two principal kinds of coal ? Which kind is mostly found in Canada ?
8. What is meant by " a seam of coal " ?
9. What is meant by a coal shaft ? How deep are the deepest ?
10. Are the steel mills of Canada near the chief coal supplies ?
11. What special dangers are miners exposed to in their work ?
12. What is meant by " base metals " ? Name some of them.
13. Why do Ontario and Quebec buy so much of their coal in the United States, although Canada could produce an ample supply for the whole Dominion ?
14. Study this graph showing the increase in mineral production in Canada from 1890 to 1910. The vertical divisions show the value in millions of dollars. Each horizontal division represents one year. Construct a similar graph showing the expansion from 1910 to 1920, as given in these figures : 1911, 103 million dollars ; 1912, 135 ; 1913, 145 ; 1914, 128 ; 1915, 137 ; 1916, 177 ; 1917, 189 ; 1918, 211 ; 1919, 176 ; 1920, 227.



MINERAL PRODUCTIONS
OF CANADA.

15. MANUFACTURES

In the early colonial days in Canada each family, or group of families, produced for themselves all that they required. They lived on the produce of their own farms. They built their own houses. Their clothes were made of the wool of their own sheep, spun and woven in their own homes. Probably the earliest kind of factory for common use was the flour mill, built on the nearest stream, where the grain of a group of farms was ground into flour or meal.

But at a very early stage special trades also began to be carried on. The weaver, the tailor, or the blacksmith spent his whole time in his workshop, and the farmers found it a great convenience to be able to have business dealings with these. In those districts where transportation was possible a certain amount of commerce with other countries soon began—the exporting of surplus products and the importing of such manufactured goods as were needed to make living more comfortable.

As settlements increased, however, Canada began to manufacture at home many of the various kinds of goods in common use. We cannot tell here the story of how these home manufactures sprang up and extended, until to-day Canada is not merely an agricultural country, but has also many large and growing manufacturing industries. She not only manufactures articles for her own use, but she also exports to other lands many things produced from her own natural resources. In Lesson 19, on "Trade and Commerce," the magnitude of her export trade will be dealt with.

The success of a manufacturing industry in any particular locality depends on several conditions. First, there must be a convenient supply of the raw materials required—that is, materials which come from the natural products of the land, whether animal, or vegetable, or mineral. Secondly, there must be power to drive the machinery—that is, fuel to produce steam, or water-power, either used directly to turn the wheels, or indirectly to produce electric current, which can then be carried through wires and cables for great distances to drive the factory machines. In addition to these conditions, there must be a town or centre of population which can provide and support skilled workers for the factory. Finally, there must be lines of communication by land or water, to provide means of transport for the raw material to the factory, and for the export of the finished product to the places where it is to be sold.

In Canada, as in every manufacturing country, certain districts have become the chief centres of its manufacturing activity. In every case you can easily find reasons for this in some one or more of the conditions we have just mentioned. Reasons can also be given why other districts have few or no manufactures.

The chief manufacturing areas of Canada are in Southern Ontario and in Quebec Province. Out of the half-million of people actually employed in manufactures in the Dominion, over 250,000 are in Ontario, and 160,000 are in Quebec, so these two old provinces turn out over four-fifths of Canada's total output of manufactured goods. Indeed, so large is the annual value of the factory products of Ontario that it exceeds the total value of all other forms of production in the province. In the Province of Quebec the factory products have almost half the total value of all its productions.

The kinds of manufactures developed in the Dominion are varied indeed. Taking them in groups of kindred products, we find that the largest, both as to the number of people employed and as to the annual value of the product, are those dealing with lumber and wood products, and pulp and paper manufacture. Next in order come the textile and clothing industries; then the production and manufacture of iron and steel. Food products, both animal and vegetable, employ a large number of workers in such occupations as milling, baking, meat packing, fish and fruit canning, and butter and cheese making.

EXERCISE 15

1. Are there any factories near where you live? What do they make? What becomes of the manufactured products?
2. Make a list of the raw materials which you know to be used in manufactures in your own province, and the kind of things which are produced in each.
3. The manufactured goods of one factory may become the raw material for another factory. In what trades are the following manufactured products used as raw materials :—brick, steel, woollen cloth, paper, leather, copper wire, sugar, flour? What were the original raw materials used in the various factories where these were produced?
4. The following table gives, for 1922, the number of factory employees for the different provinces. Explain why each of the other provinces has a smaller proportion of its people employed in manufacture than Ontario and Quebec.

Ontario,	237,000	Manitoba,	14,000	Alberta,	7,000
Quebec,	145,000	Nova Scotia,	14,000	Sask.,	4,500
B.C.,	27,000	N.B.,	14,000	P.E.I.,	1,100

Express the numbers given here as percentages of the total population of each province. (See page 102.)

5. Make a list for yourself of the chief products of factories which you must use every day. Try to find out which of these products are manufactured in Canada, and which are not.

16. WATER-POWER

It is only within the last hundred years that manufacturing industry has reached the important place it now holds in civilized countries. The invention of the steam-engine, the use of iron and steel, and the development of coal mining are all modern features, and the possession of abundant coal supplies has been the chief factor in the progress of any country in manufacture and trade.

In Great Britain and the principal countries of Europe, as also in the United States, manufactures are concentrated on or near the coalfields, especially where iron ores are found as well as coal. Even with railway transport, the carriage of coal is a costly business, and so factories near the coal mines have an advantage over others. As the coalfields of Canada are mostly in the far east and the far west, the central provinces were not at first favourably placed for developing manufactures. They were too far from the power supply.

Water-power was used long before the steam-engine was invented—at first for driving grist mills and sawmills, and later for spinning and weaving machinery. A small stream with a few feet of a fall was sufficient to drive a mill of the old type; but these were very small as compared with our modern steam-driven factories. In recent times, however, a new way of using water-power has been discovered, since scientific men have come to understand the many uses of electricity.

When Michael Faraday, the great British scientist, nearly a hundred years ago, found a method of turning mechanical energy into electrical energy, he made a beginning in that long series of experiments which has led to the present countless uses of electricity. Little did he and the men of his day

CHIPPAWA POWER-HOUSE, NIAGARA RIVER.
(By courtesy of the Canadian Manufacturers' Association.)

dream that their great-grandchildren would read beneath an electric light, would cook their meals on an electric stove, would ride to school or to work on an electric car, and that the electric energy which would provide these conveniences would be obtained from some fall of water, either near by or hundreds of miles away.

Instead of the open water-wheel turned by a small stream, the turbine or enclosed wheel has come into use; and the falling water is also enclosed in a pipe, so that all its energy is applied to the wheel. The turbine moves a dynamo—a machine which produces a current of electricity. This current of "hydro-electric energy" is carried by copper wires or cables to any place where it may be required, although such a place may be more than two hundred and fifty miles away. Thus power is sent cheaply and instantaneously to where it is needed.

Electric power has many uses. It is used for lighting and heating our homes. It drives the machinery of great factories, and heats the large furnaces for smelting metals. It works electric motors, either small enough for the dentist's drill or the sewing machine, or large enough to make the most gigantic wheels move swiftly.

INTERIOR OF CHIPPAWA POWER-HOUSE.
(*By courtesy of the Department of Natural Resources.*)

Not only do towns and cities reap the advantages which come from electrical power, but in the older provinces hundreds of miles of wire now link up the rural homes with some source of electrical energy. The uses of electricity on the farm are now very numerous. A few of such electrical conveniences are these: washing-machines, irons, fans, water-pumps, cream separators, churns, milking machines, and threshing-machines.

As might be expected, Ontario and Quebec have gone farther than the other provinces in developing the commercial uses of electricity. The greatest development of electrical energy in the world is still in progress in Ontario in connection with Niagara Falls. This development began in the early years of the present century. When the Queenston–Chippawa project is completed it will provide a capacity of 600,000 horse-power.

The " horse-power " (h.p.) is the standard for measuring the power of an engine or a turbine. One horse-power means as much power as will lift 33,000 pounds to a height of one foot in one minute. You might be able to carry 33 pounds up a height of 10 feet in a minute. That would be equal to $\frac{1}{100}$ part of one horse-power. One hundred boys doing the same would together exert one horse-power. But they could not go on doing this every minute for twenty-four hours a day as a machine can do.

There are two things which we may notice in connection with the use of water-power. Most manufacturing towns where coal is used are very unpleasant to live in. The air is filled with smoke and soot, and even the flowers in the gardens are half choked for want of pure air. By the use of " white coal," as electricity has been called, our busiest towns can be saved from this discomfort.

Then, again, the more coal we burn the less we have left. However great our supplies may be, even if enough to last for centuries, they are limited in amount, and we cannot restore them for those who come after us. Our forests, it is true, can be restored and maintained in value, but only after great labour and care. The wonderful power of Nature, however, keeps the waters of our rivers running without loss, whether we harness the streams or not. The country is none the poorer for what we use.

EXERCISE 16

1. Find out the meaning of "hydro-electric." What other means than water-power can produce electric current?
2. Where is the water-power which is nearest your home? Is it utilized? If so, for what purpose?
3. Does your home, or your home town or city, use electrical energy from Niagara Falls or elsewhere? For what purposes?
4. Is electricity for heating dearer or cheaper than wood and coal in your district?
5. It is estimated that Canada possesses more than ten times the available water-power she has already developed. Name some factors which will decide the rapidity of future development. Where does Canada possess water-powers which are not available for commercial purposes? (See map.)
6. Which river in Canada has the greatest amount of water-power?
7. Name a half-dozen cities in Ontario which secure light, heat, and power from Niagara Falls.
8. See if you can find the meaning of the following terms as applied to the developing of electrical energy: dynamo, turbine, transformer, penstock.
9. The following table shows what each province has done in installing water-wheels for developing electrical energy:—

Ontario	1,445,000	h.p.
Quebec	1,116,000	,,
British Columbia	355,000	,,
Manitoba	162,000	,,
Nova Scotia	55,000	,,
New Brunswick	45,000	,,
Alberta	33,000	,,
Prince Edward Island	2,200	,,

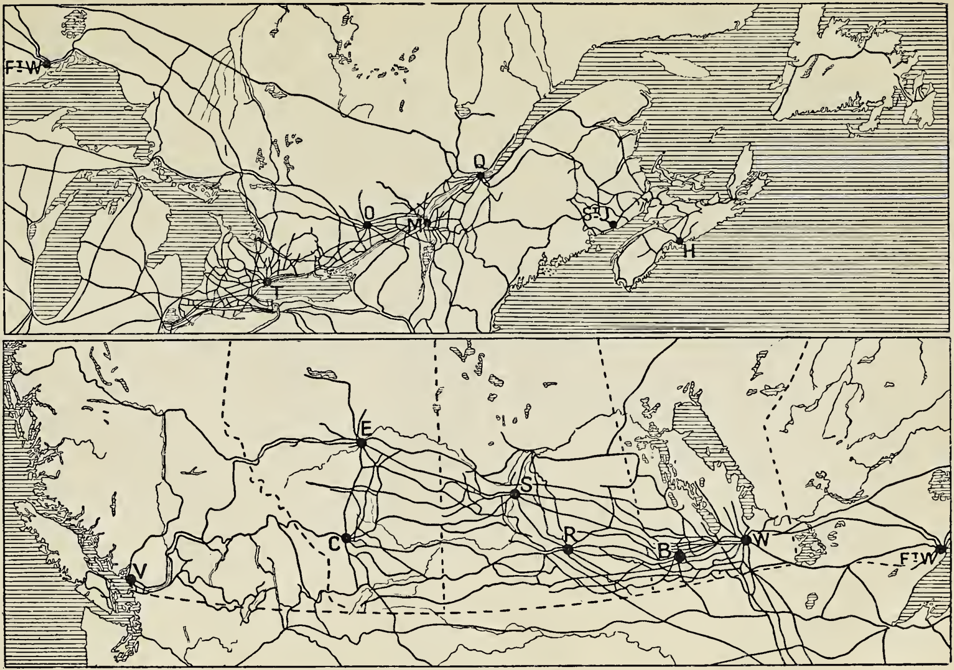
On squared paper, each small square representing 10,000 h.p., shade portions for each province, showing the comparative amounts of power utilized.

17. LAND COMMUNICATIONS

Canada is well supplied with waterways in its innumerable rivers and lakes. But when we take into account the winter temperature, which closes these waterways during several months of the year, and the nature of the land surface, which causes rapids and falls in most of the rivers, we can see that the development of the interior of the country must depend mainly on its railways. Railway communication is probably of more importance to Canada than it is to any other country.

It is interesting to imagine what Canada might have been to-day if it had possessed a large population before railways were introduced. It would probably have consisted of four distinct settlements—one on the Atlantic and Gulf shores; one in the St. Lawrence Valley and along the shores of Lakes Ontario, Erie, and Huron; one on the prairies; and one on the Pacific coast, separated by regions difficult to traverse. The two inland settlements would have found their natural outlet southward to the United States, and the two others also to a great extent. The natural features of the country would have made it almost impossible for these four to become one nation. And if railways had been then introduced, the natural course of the lines would have been north and south rather than east and west.

When the Dominion of Canada was formed there was still a great gap between the east and the west, and British Columbia made it a condition that it should be linked with the eastern provinces by a transcontinental railway. Though this seemed absurd and even impossible to some, it brought great results. The Prairie Provinces, which had not yet come into being, were provided in advance with an east and west line of com-



SKETCH MAP OF THE RAILWAYS OF CANADA.

munication, and the whole Dominion was bound into one nation, both politically and commercially.

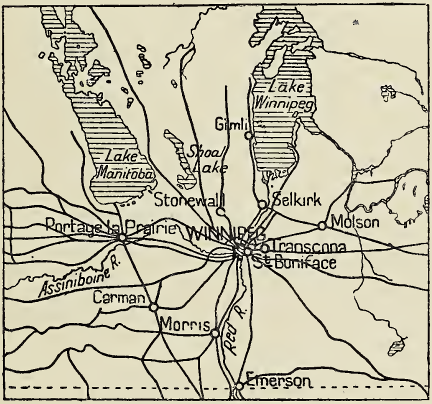
Before the time of Confederation in 1867, the Grand Trunk Railway had been constructed from Montreal to Toronto, and westward to Sarnia, connecting with the United States railways, and was then extended eastward by the building of the Victoria Bridge at Montreal and the leasing of a United States line to Portland, Maine. After Confederation, railway construction was directed to the linking up of the provinces with one another rather than with the United States, and in 1876 the intercolonial line from Halifax to Quebec was opened for traffic.

Then came the most important development of all, the transcontinental line, which should link the Atlantic with the Pacific, and at the same time open the vast prairie wastes to human habitation. Although planned in 1871, construction was not seriously begun till 1880, and then by means of wonderfully effective work the line was completed in 1885 as the Canadian Pacific Railway. Since that time much of it has been reconstructed, and better grades in the mountain region have secured more rapid and less costly running of trains.

From this time onward the great West has been the scene of a remarkable development. The little pioneer settlement and fur-trading post of Winnipeg has become one of the greatest railway centres and the largest wheat market in the world. Within a dozen years of the opening of the Canadian Pacific Railway numerous branch lines were being constructed, and the Canadian Northern Railway Company formed plans for opening a second transcontinental line to the north of the Canadian Pacific line. During those twelve years the total of the railway lines in Canada had risen from 11,000 to over 16,000 miles. In 1850 the total length had been 66 miles !

At the very beginning of the present century a third transcontinental line was projected, and in 1903 the Grand Trunk

Pacific was begun, opening for settlement some parts still farther north. Then came the Great War, and with the rise in costs and the disturbance of traffic the new railways got into difficulties. The Government came to their aid, and finally both the Canadian Northern and the Grand Trunk Pacific were taken over by the Government, along with the original Grand Trunk Railway. The combined system received the name of The Canadian National Railways.



RAILWAYS OF WINNIPEG.

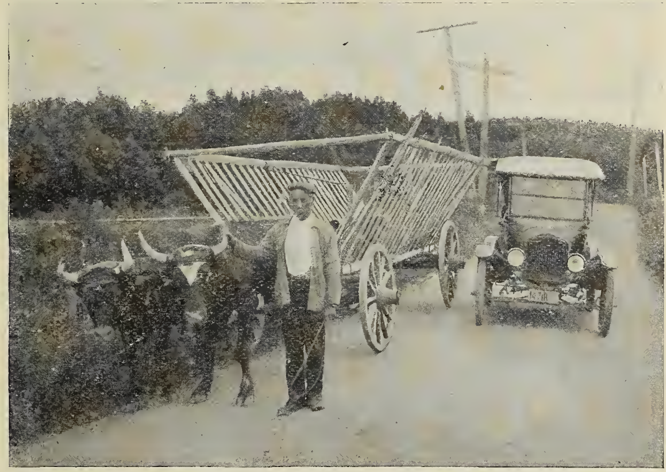
At the present time the railways of Canada have about 40,000 miles of single track mileage, of which 20,600 belong to the Government railways, and 13,500 to the Canadian Pacific. A study of the map will show the value of Canada's railway lines in broadening northward the settled belt of the Dominion. The area of settlement is capable of much greater widening still, and its expansion will depend mainly upon the construction of new railways.

MACKENZIE AT THE PACIFIC BY THE OVERLAND ROUTE.

(*C. W. Jefferys.*)

About the year 1890 the making of electric railways began in Canada. Within three years thirty companies operated 256 miles of track. Within thirty years there were in Canada 1,724 miles of electric railways.

The early land communications, as in all countries, were first the trails, or footpaths, and then the highroads with stage coach and other horse traffic. With the coming of railways these became of less importance. But in the present century, with the introduction of the automobile and the motor freight truck, the roads and highways are again rising in importance. The improvement of these roads, with a surface suited to motor transport, is now being extensively undertaken. This will be of great value to those living at some distance from the



CONTRASTS IN COMMUNICATION—RAILWAY, OX-WAGON, AND AUTOMOBILE.
(By courtesy of the Canadian National Railways.)

railway, and will add much to the convenience and comfort of the people, and thus help to attract new settlers to the lands waiting to be occupied. The automobile, indeed, is changing the social life of the people of Canada, in country as well as in town. In 1922 more than 70,000 passenger cars were owned in Canada by farmers alone.

EXERCISE 17

1. How old is the railway nearest to your home? How far do the trains on this railway go?
2. What is the longest railway journey you ever took in Canada? How long were you on the road?
3. What is the longest automobile ride you ever had? Were the roads in good condition?
4. If you wished to travel by rail from your home to Quebec, what route would you take?
5. If you wished to travel from your home to Edmonton, how would you plan your trip?
6. Draw a sketch of the transcontinental lines between the Atlantic and Winnipeg. Mark the chief cities on each.
7. Draw a similar map showing the transcontinental lines from Winnipeg to the Pacific, marking the chief cities.
8. Refer to a physical map, and find out what surface features compel all these transcontinental lines to pass through Winnipeg.
9. Which railways extend north of latitude 55°? Find out the reason for the construction of each.
10. Make a list of places where railways cross the boundary between Canada and the United States. Find reasons for some of these crossings.
11. Find out some reasons why the two newer transcontinental lines cross the Rocky Mountains by the Yellowhead Pass instead of going either farther north or farther south.

18. WATER COMMUNICATIONS

CANADA, as we have seen, is well supplied with rivers and lakes to provide water communication, and it was by those waterways that the country was explored and traffic was carried on in the early days. On most of the rivers, however, there are many falls and rapids. When the voyageur came to one of these, he landed and made a portage, carrying his canoe and its contents to the smooth water beyond.

With our large modern steamships this plan would not work. They require deep water, such as only the largest rivers can provide, and the rapids must be avoided by some other means than a portage. So a canal is dug alongside the rapid, not sloping like the river bed, but in level sections at different heights, like the steps of a great stair. Between every two sections is a basin, called a lock, with water-tight gates. This basin can either be filled with water to the level of the section above, or be emptied to the level of the section below. The ships enter these locks, are shut in, are raised or lowered, and then pass on to the next section of the canal.

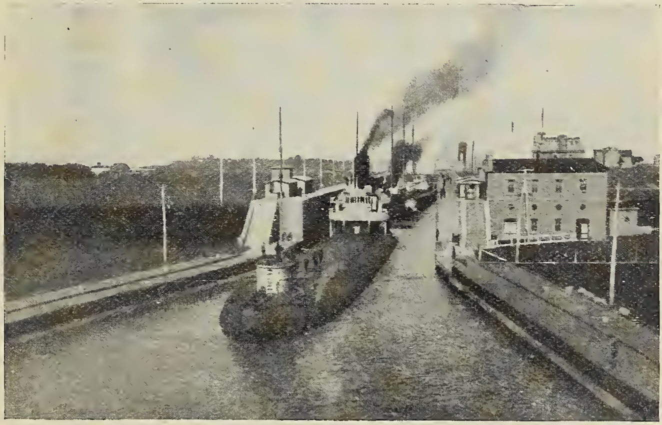
The chief waterway of Canada is the St. Lawrence and the Great Lakes. When you remember that Lake Superior, the natural outlet for the prairie wheat belt, is 602 feet above sea-level, you will see that it must have required much planning and costly construction to take large grain ships up and down this formidable slope. Let us see how it is done. Perhaps it will be best to proceed upwards from the east.

From the Atlantic Ocean to Montreal all that was needed was a deepening of some shallow parts of the river. The slope is very gentle, and the current is not too rapid for ships to steam against it. From Montreal up to Lake Ontario is much more difficult. The lake is 246 feet above sea-level (over 200 feet above the level of the St. Lawrence at Montreal), and there are several rapids in the river, such as the Lachine Rapids, which bar the way to large vessels. Here the canals begin, and in the 180 miles up to Lake Ontario there are six canals, with a total length of 45 miles. The most important of these are the Lachine, the Soulanges, and the Cornwall. In all these St. Lawrence canals the depth of the water is 14 feet.

Between Lake Ontario and Lake Erie lies the chief difficulty, as the latter is 326 feet above the level of the former. The only plan possible was to avoid the Niagara River entirely, with its magnificent falls and rapids, and to make a canal where the slope is more gradual and where the distance between the lakes is the shortest. So the first Welland Canal was made nearly a hundred years ago, being opened in 1829. It has twice been improved and enlarged. The present canal (completed in 1884) will be succeeded in 1927 by the new Welland Ship Canal. This great canal was begun by the Dominion Government over ten years ago. It follows the route of the present canal for more than half its length. After passing Allanburg it proceeds almost directly north to the new harbour of Port Weller, three miles east of Port Dalhousie.

The new canal has only seven locks, each with a lift of 46½ feet. Each lock is 800 feet long, 80 feet wide, and 30 feet deep. The canal itself is 310 feet wide at the water line and 200 feet wide at the bottom. Water for the operation of the ship canal is drawn from side ponds instead of directly from the canal itself, each pond covering an area of 100 acres or more. Instead of the 3,900 vessels which pass through the canal, up and down, every year, a much larger number of vessels, and very much larger vessels, will be able to use this vast new waterway. This change will not have its full value, however, until the St. Lawrence canals already mentioned have also been enlarged and deepened for ocean steamships.

Between Lake Erie and Lake Huron there is only 9 feet of difference in level, and there are no rapids to be avoided. Between Lake Huron and Lake Superior, however, there is a difference of about 20 feet, causing rapids in the St. Mary River. The Sault Ste. Marie Canal, with its single lock 900 feet long and 60 feet wide, raises and lowers vessels at this point. It should be added that there is another canal at the "Soo" on the United States side of the river.



CANAL LOCK, SAULT STE. MARIE.
(*By courtesy of the Department of Natural Resources.*)

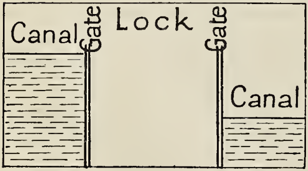
We have now completed our survey of the plans adopted to make navigation possible throughout the length of this great waterway. The total rise from sea-level is 602 feet. After passing through the Sault Ste. Marie Canal vessels have an open way to the great grain ports of Port Arthur and Fort William.

We must not forget that the shipping of Canada reaches out beyond her lakes and rivers. Canada began her ocean record early, for it was a Canadian ship, the *Royal William,* which in 1833 was the first to speed across the Atlantic under steam power. In 1922 no fewer than 1,555 sea-going vessels cleared from the port of Montreal. From Vancouver more than twice that number cleared, but many of these were bound for near-by harbours.

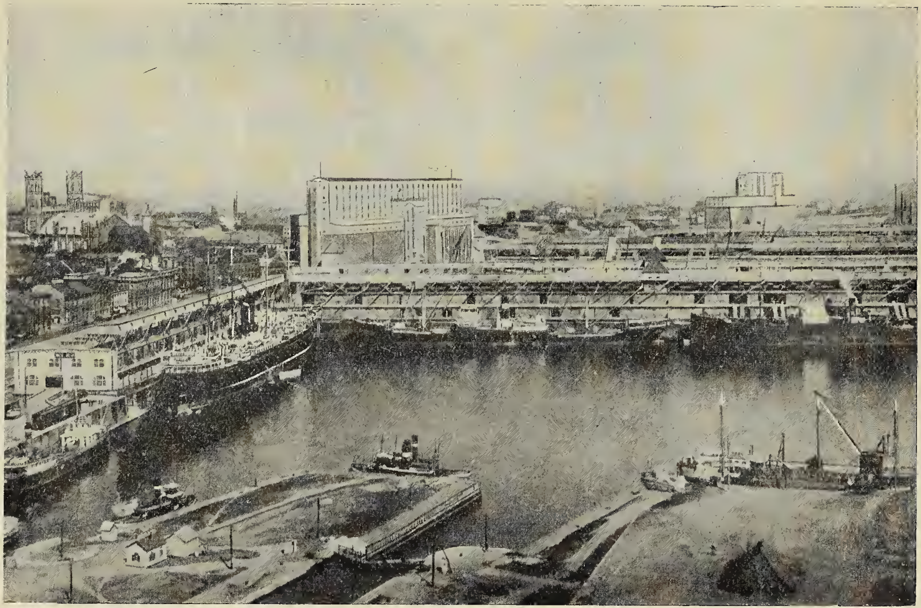
The marvellous growth of the exportation of wheat from the port of Vancouver in recent years deserves notice here. This development is due to the opening of the Panama Canal in 1920. By the new route vessels can proceed from Vancouver to the Atlantic seaboard and to Europe. In 1923–24 over fifty million bushels of wheat from the Prairie Provinces were exported by way of Vancouver. When it is considered that this western harbour is open all the year round, it is not too much to expect that very soon a hundred million bushels or more of the increasing grain crops of the West will cross the Rockies to Vancouver instead of moving towards Winnipeg.

EXERCISE 18

1. Make two drawings of a vertical section through a canal lock, like the annexed sketch; then complete the drawings, showing in one the level of the water in the lock when a ship is passing into or out of the upper section of the canal, and in the other when it is passing into or out of the lower section.



2. During what months of the year are the waterways in your own district (1) always open; (2) sometimes open; (3) always closed to navigation?



MONTREAL HARBOUR.
(By courtesy of the Department of Natural Resources.)

3. When were you last on a steamship? Were there many other passengers? What kind of freight or goods did it carry?
4. Name any large towns in the Welland Peninsula which owe very much to the Welland Canal.
5. The present Welland Canal has twenty-seven locks, and the new ship canal has only seven. What do you think will be the change effected in the time of the passage from lake to lake?
6. The new Welland Ship Canal when completed will have cost nearly, if not quite, a hundred million dollars. How much will be the cost per mile? Who will pay this immense sum? Give reasons to show that the vast project is worth the great amount of money expended.

19. TRADE AND COMMERCE

CANADA sells to other countries her grain and wood and paper and other products, and she buys from other countries coal and sugar and cotton and many other things. This buying and selling is called *trade*, or *commerce*.

It was trade that brought the French and the English to Canada in the early days, and it is trade to-day that determines the principal activities of the nation as a whole, and of every part of the nation.

Trade with other countries is called "External Trade"; trade within the country itself is called "Internal Trade." Our space is too limited to permit us to take up the various kinds of internal trade—between provinces, or cities, or towns, or town and country, or the local trade of each particular place. It would require a whole book to do that, for every kind of work by which people produce things for sale, or help in their transport and marketing, is part of the nation's trade.

Only the external trade of Canada is here touched upon, for it is that which counts most in the eyes of the world.

The best way to show what kinds of trade Canada engages in is to study a table of her chief exports and imports. Such a table is given on the next page, the items being arranged in the order of their importance or commercial value.

In commerce Canada stands very high among the countries of the world. The table on page 98 shows that in 1924 she exported goods to the value of 1,058 million dollars ; and she imported goods to the value of 893 million dollars. She was sixth among the nations in her exports and sixth in her imports. Because she exports more than she imports, or sells more than she buys, she is growing richer all the time, and it is said that her *balance of trade* is favourable. That means that her financial credit is good, and that any other nation would willingly lend her money if she needed it.

It is interesting to know from what countries Canada chiefly buys her goods and to what countries she chiefly sells. A little more than half of all her external trade, imports and exports included, is carried on with the United States. This is natural, in view of the easy communication between the two countries. More than a third of Canada's exports go to the United States, largely forest products and paper, and about two-thirds of her imports are obtained from her southern neighbour.

About one-third of all Canada's external business is transacted with Great Britain. Her exports to Britain are mainly wheat and flour ; her imports largely consist of woollen and other textiles, and iron and steel and their products. Five-sixths of Canada's European trade is carried on with the British Isles. With other parts of the Empire, especially with the British West Indies and Australia and New Zealand, there is also a considerable trade.

Total Value of Exports in 1924—$1,058,000,000.

Chief Exports.

Grain	$298,000,000
Wood and wood products, not including paper	175,000,000
Paper	98,000,000
Flour	63,000,000
Meats	23,000,000
Fish	30,000,000
Automobiles	33,000,000
Cheese	23,000,000
Sugar and molasses	12,000,000
Furs	18,000,000
Coal	9,000,000
Animals (living)	13,000,000
Butter	5,000,000
Fruits	9,000,000
Silver (bullion)	8,000,000
Copper	12,000,000
Nickel	5,000,000
Asbestos	7,000,000
Vegetables	5,000,000

Total Value of Imports in 1924—$893,000,000.

Chief Imports.

Iron and products of iron not included elsewhere	$87,000,000
Cotton and cotton products	66,000,000
Wool and woollen products	47,000,000
Bituminous coal	35,000,000
Sugar	49,000,000
Automobiles	28,000,000
Anthracite coal	43,000,000
Fruit (fresh and dried)	26,000,000
Machinery (not agricultural)	28,000,000
Silk and its products	22,000,000
Crude petroleum	17,000,000
Electric apparatus	14,000,000
Tea	12,000,000
Books and printed matter	11,000,000
Meats	7,000,000
Corn	8,000,000
Farm implements	11,000,000
Engines and boilers	8,000,000
Tobacco	8,000,000
Rubber	8,000,000
Leather	7,000,000
Gasoline	5,000,000
Binder twine	6,000,000
Coffee	3,000,000

All this volume of trade, except that with the United States, is carried by ocean steamships, but not all of it is landed at or shipped from Canadian ports. More than half of our Empire trade passes through New York, Boston, or Portland.

In shipping statistics a ship is recorded as " entered " when she arrives at a port, and " cleared " when she sails ; so that on each complete voyage the same ship appears twice. Moreover, many ships make several voyages in the course of a year, and so the same ship may be counted several times over in the yearly totals. With this mode of reckoning, the number of ships calling at Canadian ports in 1923 was over 39,000, of which about 5,000 are British, 16,000 are Canadian, and 17,000 are foreign, chiefly American. Owing to their greater size, however, British ships carried more than one-third of all the freight.

In addition to the sea-borne traffic, there is a great volume of river and lake transport, of coastwise trade between Canadian ports, and of deep-sea fishing voyages from Canadian ports and back again. This traffic, however, is not included in Canada's external commerce.

EXERCISE 19 (*a*)

1. From the list of exports given on page 98, select those which go out in any quantity from the province in which you live.
2. Classify Canada's exports named on page 98 under the four heads: (1) from the Farm, (2) from the Forest, (3) from the Mine, (4) from the Water.
3. Canada exports each year nearly twenty million dollars' worth of lath and shingles. What fraction is that of her " wood products " ?
4. Canada sells to the United States every year ten million dollars' worth of pulpwood for making paper. Why is this paper not made in Canada ?

5. What is " wood pulp " ? Why does Canada sell her wood in that form to the United States to the value of over forty million dollars a year ?

EXERCISE 19 (*b*)

1. Make a list of raw materials which the factories of Canada import from tropical countries, and mention the use of each. Find out also which parts of the British Empire supply Canada with tropical products.
2. On most kinds of imports a tax or customs duty must be paid to the Government. Find out the reasons for this. How does it affect the price of imported goods ? British imports pay a smaller duty than others ; find out the reasons why.
3. From the list of imports given on page 98, select as many as you can which come regularly into the province in which you live.
4. See if you can find from what countries Canada brings (1) her cotton and cotton fabrics, (2) her woollen fabrics, (3) her silk fabrics.
5. Where does Canada buy her tea and coffee ?
6. Why does Canada both export and import coal ?

20. POPULATION AND RACES

When the rulers of a city, or a district, or a country wish to know how many people there are therein, they send men from door to door with a record book. These men ask questions, make their records for each house, and then send in their reports. This work is called " taking the census." To take the census for the whole of Canada costs a great deal of money and a great deal of trouble, so the census for the

Dominion is taken only once in ten years, the last occasion being 1921.

The first census was taken in Canada away back in 1665. We can scarcely believe the figures which we now read in that old census, for it tells us that there were in that year only 3,215 people in the French colony on the St. Lawrence.

When Wolfe took Quebec in 1759, nearly a hundred years later, there were 70,000 in French Canada, besides about 20,000 in the British settlements which now constitute the Maritime Provinces.

By 1800 the number of the inhabitants of Canada had grown to 260,000.

During the following century (1801 to 1901) the population of Canada increased almost exactly twenty times.

The greatest growth in the population has taken place since the beginning of the present century. In ten years, from 1901 to 1911, nearly two million people were added to the total population of the Dominion. In a single year the rush was so great that the total was increased by 400,000. The growth of the next ten years was retarded by the Great War and its after effects.

The last census of Canada (1921) records a total population of 8,788,483. We can safely say, therefore, that when the next Dominion census is taken in 1931 the population of Canada will exceed ten millions.

In and near towns and cities the people live very close together, and the population there is said to be " dense." In the parts of the country that have long been settled the population is, of course, more dense than in the newly settled districts. The density of the population of the different provinces has wonderfully changed in the last fifty years.

There has been a great movement of the people from east to west—a movement of immigrants coming into the country, and a movement of former settlers in the east to the rich prairies, where land is cheap and crops are large. This westward movement is indicated in the table given below. The first column gives the population of each province, or the territory now forming each province, for the year 1871. The second column gives the figures for 1921, fifty years later. So little was known of the North-West fifty years ago that no figures can be given for the earlier years of this period.

Province.	Population in 1871.	Population in 1921.
Prince Edward Island	94,000	88,000
Nova Scotia	387,000	523,000
New Brunswick	285,000	387,000
Quebec	1,200,000	2,360,000
Ontario	1,620,000	2,930,000
Manitoba	25,000	610,000
Saskatchewan	...	757,000
Alberta	...	588,000
British Columbia	36,000	524,000

It will be seen that the old provinces of Quebec and Ontario still remain as in 1871 the chief centres of population, as sixty out of every hundred people of the Dominion still live in these two provinces.

The most densely populated of the Canadian provinces is Prince Edward Island, with forty persons to every square mile. There are, of course, many sections in all the provinces more densely populated than this, but much the highest provincial average is that of the smallest province.

In the vast area of the Prairie Provinces the population is scattered, excepting in the cities and towns. There are great tracts of land where the population is less than an average of one person per square mile. In fact, one of the drawbacks of life in those districts is that people are often lonely.

Canada differs from many other countries in having within her borders two distinct races and languages instead of one. You know enough of the history of Canada to be able to explain how this came about. You know, too, in what part of Canada the two languages are spoken—English and French. Some of you may not know that in the Dominion Parliament all the Quebec members speak French, although many of them can also understand and speak English.

Although the population of Canada is composed, for the most part, of people who are of British or of French origin, there are about a million and a half of other races. The table below gives the population by races as in the census of 1921. Only those nationalities represented in Canada by more than 100,000 people can be named here.

British (England, Scotland, Ireland)	4,827,500
French	2,453,000
German	295,000
Scandinavian (Denmark, Iceland, Norway, Sweden)	167,000
Hebrew	126,000
Bohemian and Moravian	118,000
Indian	110,000
Austrian	108,000
Russian	100,000

Some people think that the French population is every year gaining on the British in point of numbers, but this is not so. It is true that French families have two or three times as many children as British families, but it must be remembered that during the last twenty years there has been a great immigration of people from the British Isles as well as from the continent of Europe. In the last twenty years the French population of Canada has decreased from 31 per cent. to 28 per cent. of the whole population.

Let us now examine the different provinces and see to what races the people belong.

In Nova Scotia, New Brunswick, and Prince Edward Island nearly all the people are of British or French descent.

AN INDIAN CHIEF AND FAMILY.
(By courtesy of the Department of Indian Affairs.)

In Quebec there are 1,889,000 French and 370,000 British.

In Ontario there are 2,282,000 British, 248,000 French, and 130,000 Germans.

In the Prairie Provinces there are 1,102,000 British, 114,000 French, 110,000 Germans, 95,000 Ukranians, 90,000 Austrians, 80,000 Russians, and 42,000 Indians.

In British Columbia 74 per cent. of the population is British in origin. That province has 22,000 Indians. In British Columbia we find a new feature which does not appear in the other provinces to any considerable degree: there are a great many people in this westerly province who have come from eastern Asia. No fewer than 24,000 Chinese and 15,000 Japanese have found a home in British Columbia.

Nearly half the population of Yukon and the North-West Territories, as we might expect, are Indians.

The Indians of Canada are comparatively few in number, but they are represented by numerous tribes. Some descendants of the warlike Iroquois are found to-day in Central Ontario. A few Hurons live near Quebec City—the Hurons of Lorette. The Algonquins are spread over Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario, and the Prairie Provinces. Some of these Algonquin tribes are the Delawares near Lakes Erie and Huron, the Micmacs of the Maritime Provinces, the Ojibways or Chippewas in Northern Ontario and in Manitoba, the Crees near Hudson Bay and over the Prairie Provinces, and the Blackfeet south of Calgary. The warlike Sioux, an overflow from the United States, have small settlements in all the Prairie Provinces. The Athapascans belong to the northern regions of the Prairie Provinces, to British Columbia, and Yukon. British Columbia has seven distinct races of Indians, most of them speaking languages quite different from the Indians east of the Rockies.

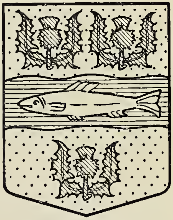
The Indian of romance and legend has almost ceased to exist. In remote places one can still find remnants of the primitive stock, speeding down rapids in birch-bark canoes, engaging in hunting and trapping, wearing their ancient and picturesque garb; but the Indian of the tomahawk, the bow and arrow, and the war-dance has gone never to return.

EXERCISE 20

1. Do you live in a densely populated place or not? Can you account for the density of the population in your district, or for the small number of the population?
2. What effect has the building of railways on the population of a district? Can you give any illustration of this?
3. The population of Nova Scotia and that of British Columbia are almost equal, but in the former there are nearly six persons to the square mile, while in the latter there are less than two. Account for the great difference.
4. A line drawn north and south through Barrie, Ontario, would be the middle line for all Canada—that is, the number of people east of that line is equal to the number west of it. Why is that middle line so far east? Has the line moved west or east with each census? Explain.
5. Find out how many people there are in Canada to each square mile. Now leave out Yukon and the Territories, and find how many people there are to each square mile.
6. Why did the Great War retard the growth of the population of Canada? Can you think of more than one reason?
7. Where are there many French-Canadians besides those in the Province of Quebec?
8. In what provinces do the largest number of immigrants from continental Europe settle? Can you tell why?
9. Account for the presence of so many Chinese and Japanese in British Columbia.
10. Where do the Indians of Canada dwell in the largest numbers?
11. The Indians of Canada number about 110,000. About how many Indians are there for every thousand of the population? Is there any reason for thinking that the number of Indians in Canada was once larger than it now is?
12. Name if you can one city in each province of Canada bearing an Indian name?
13. Have any of the provinces or territories Indian names?

PART III—REGIONAL SURVEY

21. NOVA SCOTIA



ARMS OF NOVA SCOTIA.

NOVA SCOTIA has a recorded history extending back more than four centuries. Cape Breton was visited by Cabot in 1497–98. The French called the peninsula (Cape Breton not included) by the name Acadie (Acadia). In 1621, when James I. of England gave to Sir William Alexander a great part of the whole peninsula, it was re-named Nova Scotia (New Scotland), for, you should know, both the king and Sir William were Scottish. Of the present population of Nova Scotia (524,000), eighty per cent. are of British descent and ten per cent. of French origin. You may have read that the ancestors of many of the leading people in Nova Scotia were those loyal folk, the United Empire Loyalists, about 28,000 of whom, at the close of the American Revolution, migrated from the revolting States and settled in the British regions now called the Maritime Provinces. Three thousand of these brave people founded Sydney in Cape Breton.

A glance at the map will show you that Nova Scotia is composed of two parts, the peninsula of Nova Scotia and the island of Cape Breton. The province, from north-east to south-west, is 374 miles in length. Its width is from 60 to 100 miles.

Nova Scotia is joined to New Brunswick on the west by the narrow isthmus of Chignecto. With this exception it is surrounded on all sides by the salt waters of the Atlantic, the Gulf of St. Lawrence, and the Bay of Fundy.

The coast-line is very irregular and rocky, but there are numerous harbours capable of sheltering ocean vessels. Halifax harbour is open all the year round, and Sydney harbour is also a winter port when the drift ice at the entrance is not too troublesome. Pictou harbour is the most important on the north shore of the peninsula. The coast of the Bay of Fundy is high and bold, but broken by several remarkable inlets, including the Annapolis Basin and Minas Basin.

Nova Scotia is divided into an eastern and a western slope by a range of hills, in some places over a thousand feet high. The part sloping south-east towards the Atlantic is largely covered by forest and lake, small farms dotting the river valleys. The north-western slope contains many excellent farming districts, among them the Annapolis Valley, "The Garden of Nova Scotia." The apples of this "garden" are the most famous in the world. It is possible in this district, it is said, during the month of May to drive for fifty miles under apple blossoms. Along the head of the Bay of Fundy the meadow lands are so low that dikes are needed to keep out the tide, which sometimes rises to the height of forty or fifty feet above the level of low water. The sluices of the dikes are occasionally opened, and the muddy waters of the bay are allowed to flow in so as to fertilize the soil for the next crop of hay.

The narrow but deep Strait of Canso separates the peninsula of Nova Scotia from Cape Breton. The island of Cape Breton itself is almost cut in two by a lake-like fiord, the Bras d'Or, connected by a canal with the open sea.

Nova Scotia has four principal industries—(1) fisheries, (2) mining and the making of iron and steel, (3) lumbering, and (4) agriculture.

The fish on the coat-of-arms of this province indicates the importance attached to the fisheries. The cod, the halibut, and the haddock, which are always to be found off the coast, are called "ground fish." The herring, the mackerel, and the tuna or swordfish, which move in schools or shoals, are called "school fish."

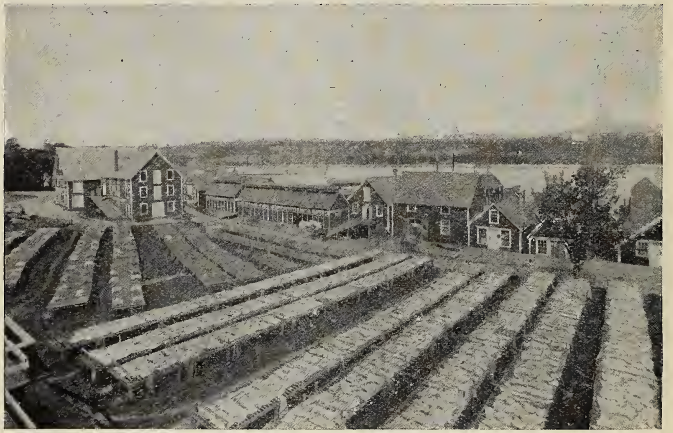
The presence of coal, iron, and limestone in districts close together has led to the development of the great iron and steel industries of Nova Scotia. Of late years the iron ore used in the furnaces of the steel mills has been brought four hundred miles by sea from Wabana, Conception Bay, Newfoundland. The limestone, essential in the making of iron, is taken from quarries in Cape Breton. There are four great coalfields—the Sydney field, the Inverness field, the Pictou field, and the Cumberland field. The Sydney field supplies three-fourths of the Nova Scotia output.

ENTRANCE TO HALIFAX HARBOUR.
(By courtesy of the Canadian Pacific Railway.)

Over fifty per cent. of the land area of Nova Scotia is still forest. Of the wood suitable for making lumber there is a rich supply. Of wood for the making of paper—spruce, balsam, poplar, hemlock, and jack pine—there are vast areas still uncut.

There are no large farms in Nova Scotia such as there are in the Prairie Provinces, but the thousands of small holdings suffice for supplying the needs of the towns and the manufacturing and mining centres.

Halifax, the chief city of Nova Scotia, was founded in 1749 by the first British settlers in that part of the world—2,500 disbanded soldiers. The city is built on a hill, overlooking a large and sheltered harbour. From this port there is a great export trade, especially with the West Indies and the American cities on the Atlantic sea-board. Halifax is an important naval station, and is often visited by ships of the Imperial Navy. The population of the city is about



DRYING FISH, DIGBY.
(*By courtesy of the Canadian Pacific Railway.*)

60,000. Across the harbour from Halifax is *Dartmouth,* a manufacturing town with about 8,000 inhabitants.

On the island of Cape Breton are the chief coal and steel centres of the province. *Glace Bay* is the principal centre of the coal mines. *Sydney* ranks next to Halifax in size, with a population of 23,000; *Sydney Mines* and *North Sydney* are near at hand. In this region can be seen all the activities of the greatest coal, iron, and steel industries in the Dominion.

New Glasgow, near Pictou harbour, is also a coal and iron centre. *Stellarton,* with its coal mines, is a growing town near New Glasgow. *Springhill,* about eighty miles north-west of Halifax, is also a mining town.

APPLE ORCHARD, ANNAPOLIS VALLEY.
(*By courtesy of the Department of Natural Resources.*)

Amherst, formerly Fort Lawrence, on Cumberland Basin in the north-west, is a shipbuilding centre, with a trade in lumber and coal, and with numerous factories. *Truro,* at the head of Cobequid Bay, is an important railway centre, and is also a favourite residential town. *Windsor,* on an arm of Minas Basin, contains the oldest institution of learning in the province, King's College, chartered by George III. in 1788.

Lunenburg is a fishing-port, sending out 150 vessels to the

Banks every season. *Digby*, on the west coast, is also a fishing centre, especially noted for its herrings. *Yarmouth* is a busy port in the south-west. *Shelburne* is a quiet little seaport with a good harbour, forty miles east of Yarmouth; this town was founded by ten thousand Loyalists after the American Revolution (1783).

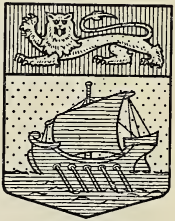
Louisburg, in Cape Breton, now little more than a fishing village, has a magnificent harbour. It was the famous French fortress captured by Wolfe in 1758. A remnant of the old fort may still be seen.

EXERCISE 21

1. Nearly 30 per cent. of the population of Nova Scotia are of Scottish origin. With the exception of Prince Edward Island this is the largest percentage of Scottish to be found in any of the provinces. Can you find any reasons for this?
2. Why has Nova Scotia no large rivers?
3. Most of the coal exported from Nova Scotia goes to Montreal and Boston. What routes may the coal-carriers take?
4. The railway mileage of Nova Scotia is about 1,500. Why are there so few railways in the province?
5. Find out what you can about these great Nova Scotians—(1) Judge Haliburton, (2) Joseph Howe.
6. How does it come about that there are in Nova Scotia over 50,000 of French origin? Perhaps you can give more than one reason for this.
7. See if you can find Sable Island on the map—in the Atlantic, east of Halifax. Have you ever read the story of the strange happenings on this island three centuries ago? Why is there a life-saving station there to-day?
8. How many people are there to the square mile in Nova Scotia? (See Exercise 1 (*b*) for area and Lesson 20 for population.)
9. For pictures of French life in Nova Scotia read Longfellow's *Evangeline*. Do not accept his history as correct.

22. NEW BRUNSWICK

THE written history of New Brunswick begins in 1534, when Jacques Cartier first landed on its shores near the mouth of Miramichi Bay. Not till 1604 was the coast thoroughly explored, when Champlain named the river St. John, after St. John's Day, June 24th—the day of his arrival there. New Brunswick, according to the English claim, was a part of Acadia, and so at a later time was included in Nova Scotia. In 1783–84 ten thousand Loyalists, exiled from New England because they had opposed the War of Independence, settled at St. John, and in 1784 the province of New Brunswick was created, with Fredericton as capital. The name given to the province was no doubt a compliment to George III., a monarch of the House of Brunswick.


ARMS OF NEW BRUNSWICK.

The population of New Brunswick at the last census (1921) was 387,876. Two-thirds of the people are of British origin. Nearly one-third (121,000) are of French origin, many of them descended from the primitive Acadians. These French-Canadians are settled mainly in the north-eastern counties, and are engaged chiefly in fishing and agriculture. The French-Canadians of the extreme north-west have come in from the Province of Quebec.

New Brunswick is the largest of the Maritime Provinces. It is somewhat square in shape, with a length of 230 miles, from north to south, and a greatest width of 190 miles, from east to west. It is bounded on the north by Chaleur Bay and the Province of Quebec; on the east by the Gulf of St.

Lawrence; on the south by the Bay of Fundy; and on the west by the State of Maine.

New Brunswick is a rolling country, full of hills and valleys. Most of the hills are not high, although elevations of a thousand feet or more are found in King's County and in Northumberland County. Mount Carleton, in the latter county, is 2,716 feet in height.

The province has many great rivers. The most famous is the St. John. With its eight tributaries it drains an area of 26,000 square miles, more than half of which is in the State of Maine and in Quebec Province. After a course of about 450 miles it discharges its waters through a narrow gorge, by a fall of fifteen feet, into the Bay of Fundy. At this point are to be seen the remarkable "Reversing Falls." As the tide rises to the level of the river the falls vanish. At full tide the water of the bay is higher than that of the river, and a current goes tumbling down fully ten feet in the direction opposite to the flow of the river.

The St. John is navigable to Fredericton, 85 miles from its mouth. Small vessels can go as far as Grand Falls, 225 miles from the sea. The Grand Falls are very beautiful, with a leap of eighty feet.

The St. Croix River forms the boundary between New Brunswick and Maine. The Restigouche, in the north of the province, is noted for its trout and salmon, as are also the Miramichi and its tributaries.

In a small river, the Petitcodiac, which flows past Moncton into the Bay of Fundy, occurs a strange phenomenon. The tide comes up the river as far as Moncton as a great wave, sometimes five or six feet high, moving north with a mighty roar. This strange wave is called the "Tidal Bore."

New Brunswick has many excellent harbours, the best being those of St. John and St. Andrews. Chaleur Bay is also everywhere navigable. The mouth of the Miramichi affords so good an anchorage that two important towns, Chatham and Newcastle, have been built there.

New Brunswick's chief asset is its large area of land suitable for agriculture, three-fifths of the soil being fit for farming. At present only about one-eighth of this good land is under crop. When the forests are cut down, and when the Prairie Provinces cease to draw so many settlers from the east, New Brunswick's agricultural activities will grow greatly.

TYPICAL AGRICULTURAL DISTRICT, NEW BRUNSWICK.
(*By courtesy of the Department of Natural Resources.*)

The forest products of New Brunswick have from the earliest times been the chief exports of the province. About forty per cent. of the area of the province, mostly timbered, still belongs to the Crown. The private owners of the forest regions, or those who have timber limits under lease, derive much wealth every year from lumber, lath, shingles, and pulpwood.

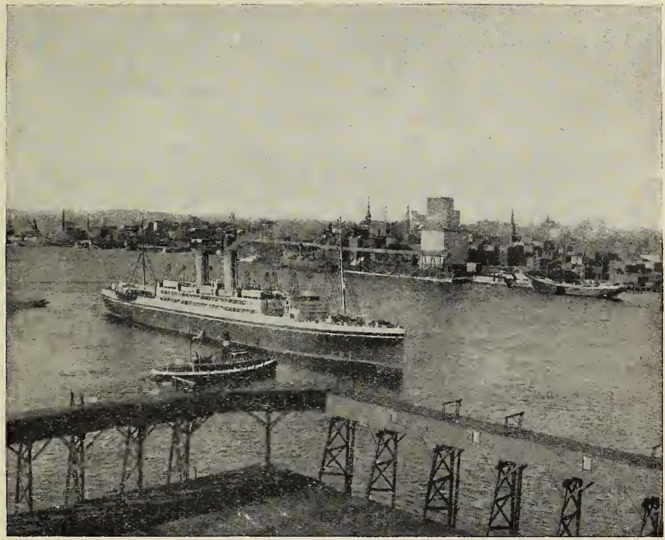
The oldest industry in New Brunswick is, of course, fishing. Only Nova Scotia and British Columbia among the provinces of the Dominion surpass New Brunswick in respect to the fisheries. The inshore fisheries are here the most important, deep-sea fishing being left, for the most part, to Nova Scotians.

New Brunswick has for many years been celebrated for its big game. In a recent year a thousand moose and more than two thousand deer were killed by sportsmen.

St. John (population 47,166) is situated on the Bay of Fundy, at the mouth of the St. John River. Though not the capital, it is the chief financial and commercial city of the province, and has numerous manufacturing establishments. To its overseas trade the city owes its greatest importance. It is the Atlantic port nearest to central Canada, and its magnificent harbour is free from ice during the whole year.

Moncton is the second in size among the cities of New Brunswick, with a population of 17,500. It is an important railway centre, being the Atlantic headquarters of the Canadian National Railways. *Fredericton* (8,000), the capital of the province, is near the head of navigation on the St. John River. It was chosen as the capital at a time when the English feared a possible attack from the revolting colonies to the west and south.

Chatham and *Newcastle*, on the Miramichi, are centres of the lumber and fishing industries. *Campbellton* and *Bathurst* are important towns on Chaleur Bay. *St. Stephen* and *St. Andrews* are both on the St. Croix, the latter town a popular summer resort. *Woodstock* is a busy farming centre on the St. John.



ST. JOHN HARBOUR.
(By courtesy of the Canadian Pacific Railway.)

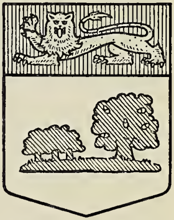
EXERCISE 22

1. Chaleur Bay is the *Baie des Chaleurs* of Jacques Cartier. It was a very hot day when the French sailor arrived in 1534. Can you find the average summer temperature of the bay?
2. " Before the days of iron and steel ships the clippers of St. John were famous all over the world." Find out what these " clippers " were.
3. St. John is the oldest chartered city in Canada. See if you can discover the date of the founding of the city.

4. Find on your map the famous Aroostook Valley, once claimed by both New Brunswick and the State of Maine. What treaty gave most of it to Maine ?
5. New Brunswick touches on the north the three Quebec counties of Bonaventure, Rimouski, and Temiscouta. Find these counties on your map, and then discover, if you can, how near New Brunswick is to the waters of the St. Lawrence.
6. Pick out from the counties of New Brunswick at least five which have the same names as certain English counties.
7. Explain the two wonderful phenomena of New Brunswick which are caused by the high tides of the Bay of Fundy —(1) The Reversible or Reversing Falls, (2) The Tidal Bore.
8. Why does New Brunswick give more attention to inshore fishing than to deep-sea fishing on the Grand Bank ? Consult a map of the Maritime Provinces.
9. On the south shore of New Brunswick herrings are caught in great numbers. They are cooked in oil and then packed in tins. What are these herrings called when sold in the shops ?
10. Why has New Brunswick been called " The Sportsman's Paradise " ?
11. In what important natural resources is Nova Scotia richer than New Brunswick ?
12. As a port, what advantages has St. John over Halifax ? What advantages has Halifax over St. John ?

23. PRINCE EDWARD ISLAND

THE first name of Prince Edward Island was Île St. Jean—the Island of St. John. In 1798 it received its present name from Edward, afterwards Duke of Kent, father of Queen Victoria. In that year he was commander-in-chief of the British forces in North America.



ARMS OF PRINCE EDWARD ISLAND.

When the island was ceded by the French to the British, in 1763, it was placed under the administration of Nova Scotia, but within ten years it was made a separate colony.

In 1864 Canadian statesmen met in Charlottetown (formerly Port la Joie—Harbour of Joy) and discussed a plan for uniting all the provinces of Canada into one Dominion. When Confederation was accomplished in 1867, Prince Edward Island was not willing to join the sister provinces, but in 1873 she was induced to follow their example.

Prince Edward Island is separated from Nova Scotia and New Brunswick by Northumberland Strait, which varies in width from 9 to 30 miles. The island is extremely irregular in shape, and it is almost divided into three equal parts by deep inlets and tidal rivers. The land is low and undulating, no elevation in the province rising higher than about 400 feet. The north shore is a long series of beautiful beaches of white sand. In the south the sand is of a bright red colour, being formed from the crumbling of low cliffs of red sandstone.

The climate of Prince Edward Island is healthy and bracing, though much milder than in the provinces to the south. The island is almost entirely free from the fogs which sweep over sections of the other maritime provinces.

The greatest length of the island is 145 miles, and its greatest width is 34 miles. Its total area is 2,184 square miles. The population at last census was 88,615. It is, accordingly, the most densely peopled of the Canadian provinces.

The people of Prince Edward Island are mainly of British descent, but there are also many descendants of the French Acadians. A large party of Scottish immigrants were settled here by the Earl of Selkirk in 1803–4, and about 40 per cent. of the population are of Scottish descent.

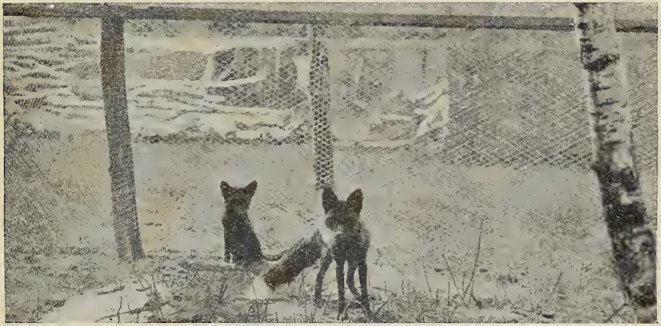
Prince Edward Island is called the "Garden of the Gulf." As the soil is very fertile, agriculture is the most important industry. Oats and potatoes are the chief products of the farms. Dairy farming is common in all sections of the island, and the province is especially famed for its horses and sheep.

Access to the island is easy. Steamships ply daily between Pictou, Nova Scotia, and Charlottetown, the capital. A Government ferry crosses from Cape Tormentine, New Brunswick, to Port Borden. Steamers also cross from Point du Chene to Summerside.

One of the duties of the Department of Marine and Fisheries at Ottawa is to maintain winter communication between the mainland and Prince Edward Island during the four months when the strait is ice-bound. This service is kept up by ice-breaking boats. Ice-sledges are occasionally used when heavy ice blocks the passage of these boats.

In recent years Prince Edward Island has gained new laurels by the great success of her fox farms. In particular, the silver black fox fur of the island has no superior in the world. There are over four hundred fox ranches, all doing a thriving business. The fur from a single Prince Edward Island fox sometimes brings more than $2,000. The average value is about $250.

Charlottetown (12,000) is the capital. *Summerside* (3,000) and *Georgetown* (900) are next in size. A railway, part of the Canadian National system, traverses the island from end to end.

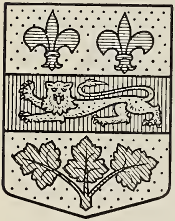


ON A BLACK FOX FARM.
(*By courtesy of the Department of the Interior.*)

EXERCISE 23

1. Prince Edward Island is a land of many capes. Write down the names of the capes at the four corners of the island, and of the cape nearest to New Brunswick.
2. What natural products found in the other maritime provinces are almost entirely absent from Prince Edward Island ?
3. Some writers describe Prince Edward Island as "crescent-shaped." What do you say of this description ?
4. How many people are there to the square mile in Prince Edward Island ?
5. What effect has the proximity of the sea on the climate of Prince Edward Island ?
6. Find on your map Malpeque Bay, famous for its oysters.
7. A county in Ontario is named after the prince who gave his name to Prince Edward Island ; find it on your map.

24. QUEBEC



ARMS OF QUEBEC PROVINCE.

THE romantic story of Quebec Province is almost all there is of Canadian history for more than two hundred years. From the arrival of Jacques Cartier in the St. Lawrence, 1535, down to the English conquest of 1759, there is a long and interesting story of Indian wars, wars with the English, daring adventures, explorations, fur-trading, the labours of the Jesuit and other missionaries, and numerous other activities, which only a history book can fully record. The history of Quebec since Wolfe's day is another wonderful narrative of settlement and political development. To-day none of the provinces of Canada has a better status or a brighter future than the province first named "New France," then "Lower Canada," and now "Quebec."

Quebec is the largest of the Canadian provinces, with an area of 700,000 square miles. From east to west it extends 1,000 miles, and from north to south 1,200 miles. The province is pear-shaped, the larger end to the north. Its northern boundary is Ungava Bay and Hudson Strait. On the north-east it is separated from the Atlantic by the narrow strip of the Labrador coast belonging to Newfoundland; the exact boundary line between Quebec and the Newfoundland strip of Labrador has yet to be fixed. On the south and south-west of Quebec are New Brunswick, the United States, and Ontario. On the west are Ontario and Hudson Bay.

The part of the province south of the St. Lawrence may be divided into two sections—(1) the Eastern Townships, a group of counties south-west of Quebec city, lying between

Montreal and the United States borders, and (2) the rest of the area along the St. Lawrence, through which run the Notre Dame Mountains to the Gaspé Peninsula. These mountains are a spur of the Appalachian Mountains, which enters the province east of Lake Champlain. This second section includes the counties south of the St. Lawrence lying both to the west and to the north-east of the Eastern Townships.

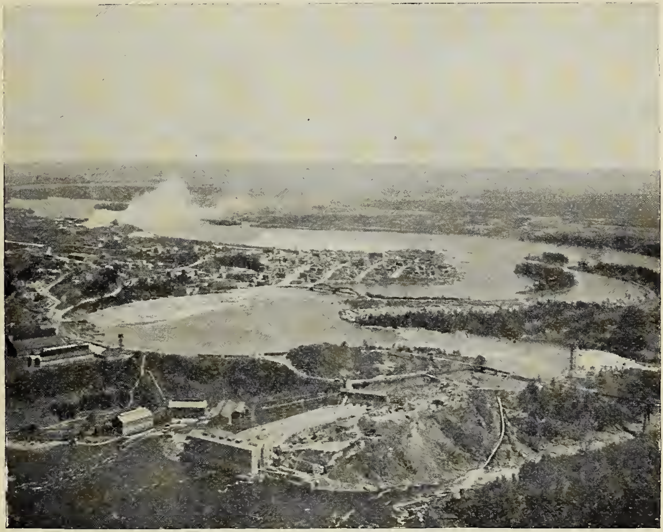
A DAIRY HERD, QUEBEC.
(*By courtesy of the Department of Natural Resources.*)

The part of the province north of the St. Lawrence may be conveniently divided into three parts: (1) from the Saguenay River eastward—that is, the southern edge of the Laurentian tableland—"a stern and rock-bound coast," sparsely settled, and not very inviting; (2) a strip of fertile and settled agricultural territory, dotted with cities and towns, along the river, from the Saguenay to the Ottawa; and (3) the Laurentian Plateau, a land of hills, and rocks, and lakes, and streams, and forests, extending from Hudson Strait to within a few miles of the St. Lawrence Valley.

IN THE MAPLE BUSH—GATHERING SAP.
(By courtesy of the Department of Natural Resources.)

Quebec Province is rich in water-ways. The great St. Lawrence (including the Gulf) is navigable for a thousand miles from the ocean. If you take passage at Montreal for Britain, you will still be in the Gulf of St. Lawrence on the third day of your voyage. The river is twenty miles wide at Saguenay, and its estuary, beginning at Point des Monts, is a hundred miles wide at Anticosti Island, where it enters the Gulf.

The main tributaries of the St. Lawrence are these: (1) The Richelieu from the south, which drains Lake Champlain. (2) The Ottawa from the north-west, the largest tributary, six hundred miles long. It empties into the St. Lawrence by four mouths, forming several islands, among them the great island of Montreal. This river is navigable, with the aid of two small canals, up to Ottawa city. (3) The St. Maurice River, from the north, which taps a region very rich in lumber and pulpwood, and enters the St. Lawrence at Three Rivers. (4) The Saguenay River, from the north-east, flowing into the St. Lawrence east of Quebec city. It is the outlet of the waters



WATER-POWER AND INDUSTRY.
(*Copyright of the Fairchild Aerial Surveys Company.*)

of the beautiful Lake St. John. The scenery on this lake and river is very beautiful. Every traveller wishes to see the glorious capes of Eternity and Trinity.

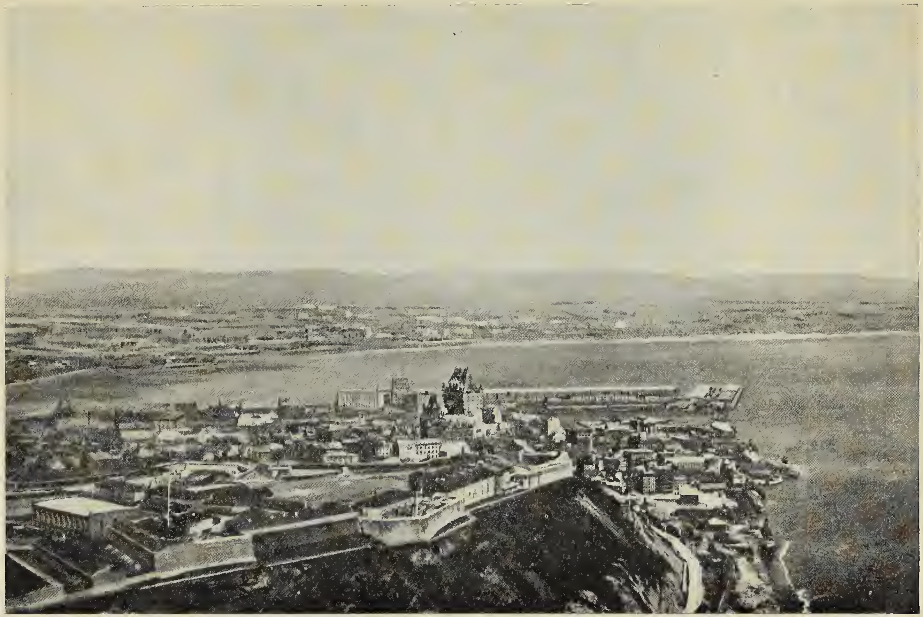
The population of Quebec Province is 2,362,000. Of these eighty per cent. are of French origin. About one-fourth of the people in Montreal are British; in Quebec city only one-twelfth are British. In the Eastern Townships, originally settled by United Empire Loyalists and other English-speaking people, the majority are of British descent, but the French-speaking element is gradually gaining ground in this section of the province. The rural folk of Quebec Province, generally known as *habitants*, are a steady, industrious, thrifty, and home-loving people.

Agriculture is the leading industry of the province, the chief farming areas being in the western portion of the province, mainly in the valleys of the St. Lawrence and Ottawa rivers and in the Eastern Townships. Oats and hay are the chief crops. On account of the abundance of the fodder crops the dairy industry flourishes, nearly every parish having a creamery and a cheese factory. The farm livestock of the province is exceedingly numerous.

The production of maple sugar and maple syrup is a source of considerable revenue. The centre of this industry is in the Eastern Townships.

The forests of Quebec are vast beyond measure. For many years lumbering came next to agriculture in importance, but during the last ten or fifteen years another great industry has crept up to second place, and there are now about fifty pulp and paper mills in the province. Every year over one and a half million cords of Quebec pulpwood are made into paper, either in the province itself or in the paper mills of the United States.

Of the minerals of Quebec asbestos heads the list. Indeed, nearly ninety per cent. of the world's asbestos is provided by



THE CITADEL AND CITY OF QUEBEC.
(Copyright of the Fairchild Aerial Surveys Company.)

Quebec. Very promising discoveries of gold have recently been made in the north-western part of the province, and hundreds of claims have been staked out.

The abundance of water-power in Quebec gives the province high rank in its manufactures. The St. Maurice River supplies power at Shawinigan Falls which is distributed far and wide and turns the wheels of numerous factories. The power development of Quebec is going ahead very rapidly.

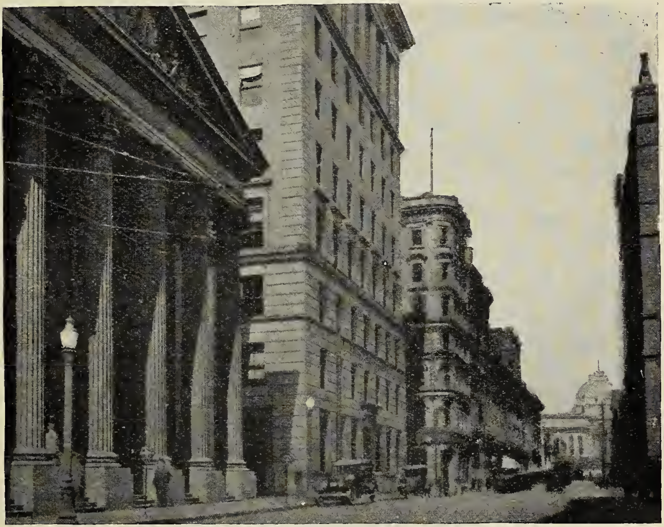
Quebec is the leading province of the Dominion in the manufacture of textiles—that is, fabrics made by weaving, such as cottons, woollens, knitted goods, and ready-made clothing. Most of these are made in the mills of the province on a large scale.

Quebec (population, 95,000) is the capital of the province. No other city in Canada has so magnificent a site. It stands on a triangular point between the St. Lawrence and St. Charles rivers, with the Plains of Abraham on the landward side. The lower town, the centre of business, is built on a narrow strip by the river shore beneath the cliffs of Cape Diamond. Within sight of the city, to the west, is Quebec Bridge, one of the largest in the world, 3,240 feet in length. *Levis*, or *Point Levi* (10,500), opposite Quebec, has large docks.

Montreal (618,000) is the largest city in the province, and indeed of all Canada. It is the chief seaport of the Dominion, and the chief commercial, industrial, and financial centre. From the summit of Mount Royal, 750 feet high, there is a splendid view of the great city. The island on which Montreal is built, Montreal Island, extends for thirty-two miles along the St. Lawrence. The Victoria Jubilee Bridge, nearly two miles long, spans the St. Lawrence here. The harbour of Montreal, deep enough for large ocean ships, has nearly eight miles of wharfage accommodation. The city has numerous stately buildings—churches, hospitals, banks, and colleges.

Chief among the educational institutions are McGill University, with its affiliated colleges, and the French university of Laval, usually called Laval University.

Verdun, Westmount, and *Outremont* are really suburbs of Montreal, but are separate municipalities.



MONTREAL—THE FINANCIAL DISTRICT.
(*By courtesy of the Department of Natural Resources.*)

Two busy manufacturing towns near Montreal deserve mention—*Lachine* (15,000) and *St. Hyacinthe* (11,000). Lachine got its name in 1669 in mockery of La Salle, who dreamed of a westward passage to China (*La Chine*) in this direction. St. Hyacinthe has important schools and religious establishments.

Three Rivers (22,000), at the mouth of the St. Maurice River, has extensive lumber and pulp mills. The St. Maurice at its mouth is divided by two islands and runs into the St. Lawrence in three channels, thus giving the town its name.

Twenty miles north-west of Three Rivers is the new town of *Shawinigan Falls* (10,600), which owes its rapid growth to the development of the water-power of the St. Maurice River at this point.

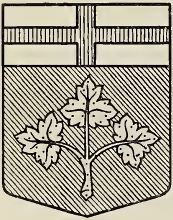
The chief city of the Eastern Townships is *Sherbrooke* (23,600), with large cotton and woollen mills. *Hull* (24,000), on the north bank of the Ottawa River, opposite the city of Ottawa, manufactures lumber, wood-pulp, paper, wooden ware, and matches.

EXERCISE 24

1. The "Eastern Townships," or counties, are Missisquoi (east), Brome, Stanstead, Shefford, Sherbrooke, Compton, Richmond, Drummond, Wolfe, Arthabaska, Megantic, and Frontenac. Of these twelve names only one is French. Compare these names with the names of the other Quebec counties, and account for the remarkable contrast in origin.
2. "In the counties of Ottawa and Pontiac are hundreds of lakes teeming with bass and trout, which have never been fished." Find these counties on the map. (The newer maps have split Pontiac into Wright and Pontiac, and for Ottawa have substituted Hull and Labelle.)
3. The city of Quebec has been called "The Gibraltar of the New World." State the reason.
4. Find in your history book the original names of Montreal and Quebec.
5. Why should Montreal have become a greater city than Quebec, although the latter is nearer the ocean ?
6. State the water boundaries of Quebec Province.

7. How do French-Canadian farms differ in shape from those of the rest of Canada ? What caused this peculiarity ?
8. What is meant by calling the St. Lawrence " the main artery of Canada " ?
9. The rise of the tide is much higher at the city of Quebec than at the island of Anticosti. Try to find out the reason for this.
10. If you have access to an old map of Quebec, you will find no county of Frontenac. The new county was made up of part of Beauce and part of Compton. Find the county on the new map. Also find the county of Frontenac in Ontario. After what great man were these counties named ?
11. Where is Lake Champlain ? Is any part of it in Canada ? Who discovered it ? Find the county of Champlain on your map.
12. By noticing which way the rivers flow, trace the watershed of the Notre Dame Mountains from Lake Champlain to Gaspé.
13. Make a list of all the counties of Quebec which have been named after persons famous in the history of Canada.
14. (*a*) Find Hamilton River and Hamilton Inlet on the map of Quebec. Why have water-ways so large been as yet almost neglected ?
    (*b*) Find on the map the Island of Orleans. What makes it of special historical interest ?
    (*c*) Find the names of three expansions of the St. Lawrence into lakes, one east, and two west, of Montreal.
    (*d*) Find Lake St. John on the map. Which is farther north, Lake St. John or Lake Superior ?
    (*e*) Find Father Point on the map. What gives it special importance ?
    (*f*) Find on the map Ste. Anne de Beaupré, the town with a celebrated shrine. Also, Montmorency Falls, near at hand.
15. Find in the dictionary the meaning of these French-Canadian words, *calèche*, *voyageur*, *habitant*.

25. ONTARIO



ARMS OF ONTARIO.

THE first white man to set foot in what is now Ontario was Champlain. In 1613 he explored the valley of the Ottawa, and in 1615 by that route he reached Georgian Bay, where he spent the winter among the Indians. From there in 1616 he threaded his way south to Lake Ontario. But as we are concerned with the geography and not the history of the province, we must pass over the interesting story of the explorers, of the settlement of the Loyalists, of the war of 1812, of the rebellion of 1837, and of the rapid growth of the population with the coming of the railways.

Ontario is 1,000 miles long, from Lake Erie to the north-west corner of the province, and 900 miles wide, from the Quebec border to Manitoba. It is the second in size of the provinces, with an area of over 400,000 square miles. The details of its boundaries may be followed on your map. Much of the boundary is water, as you will see—600 miles of salt water in the north, and 1,600 miles of fresh water on the west, south, and east—vast chains of lakes and rivers.

Seventy-five per cent. of the people of the province were born in Ontario, and are proud to call themselves Canadians. As they are of British ancestry, they are also proud of the old land of their fathers. In the eastern part of the province there are about 220,000 French-Canadians. The other 25 per cent. of the population are mainly immigrants from the "Old Country." As has been already noticed, there are 25,000 Ontario Indians on their scattered reservations.

Ontario may be described as an undulating or rolling plain, since very few elevations break the even surface of the landscape. There is a belt of high land—" The Height of Land "—running from east to west in Northern Ontario, from which the rivers flow north to Hudson Bay and south to the Great Lakes. In Southern Ontario there is also the Niagara escarpment, running from Queenston Heights to Georgian Bay, and dividing Old Ontario into two well-marked plains of different levels.

A SMALL FARM, SOUTHERN ONTARIO.
(*By courtesy of the Department of Agriculture, Ontario.*)

Ontario is chiefly an agricultural province. In Old Ontario farming has been for a hundred years the chief occupation of the majority of the people. In New Ontario there are tens of thousands of acres of fertile land awaiting settlement. The chief crops of the province are wheat, oats, barley, peas, beans, hay, corn, potatoes, beets, and turnips. Nearly every farm has an orchard. The raising of live stock is not neglected anywhere. Dairying is an important industry in the province, and a large export trade with Great Britain is carried on.

The great fruit-growing section of Ontario borders on Lakes Erie and Ontario. All the hardy fruits flourish in that district, and peaches grow to perfection in the Niagara peninsula. It is a glorious sight to view from an elevation on "The Mountain" the vast peach orchards in May, when the rosy pink blossoms are giving their promise of a rich September harvest.

In respect to mineral productions Ontario is the premier province of Canada. The silver mines of Northern Ontario have already had an output worth $100,000,000, and the gold mines now produce $25,000,000 worth of bullion in a single year. Ontario's production of nickel is the largest in the world, as already stated. Of the non-metallic minerals, mention has already been made of the salt deposits near Windsor, and of the oil and gas of south-western Ontario.

Of the forest wealth of Canada, as described in Lesson 8, Ontario possesses her full share. The province has still 100,000 square miles of forest lands, covered with timber trees, fuel trees, and pulpwood trees. The Upper Ottawa is the most important of the lumbering districts, but there are also extensive tracts of timber west of Lake Superior and north of Georgian Bay. In Northern Ontario have been built some of the largest paper-mills in the world, as there is enough of spruce, fir, and poplar in that region to keep the mills running for fifty years or longer.

It would take several pages to describe the network of railways with which Old Ontario is supplied, and even New Ontario is also well provided with transportation facilities.

Nearly all these railways are now either part of the Canadian Pacific Railway system or part of the Canadian National Railways. The most historic road in the province is the old Grand Trunk Railway, now a part of the Canadian National Railways, traversing the southern sections of the province from end to end for about five hundred miles. New Ontario is served well by both the great railways. The Ontario Government owns a very important short railway from North Bay to Cochrane—the Timiskaming and Northern Ontario Railway. The Michigan Central, in south-western Ontario, is, of course, a section of an American railway.

A PIONEER'S HOME, NORTHERN ONTARIO.
(By courtesy of the Department of Agriculture, Ontario.)

During the eight months of navigation many lines of steamships carry passengers and freight. The grain-carrying fleet, plying between Fort William and the lake ports, handles a large part of the grain grown in the Prairie Provinces.

Ontario is well supplied with factories of all kinds. Indeed, Toronto alone has 1,800 establishments, and Hamilton 440. The six principal groups of manufactures have to do with (1) food products, (2) textiles, (3) timber and lumber, (4) iron and steel, (5) paper and printing, (6) vehicles.

Toronto (521,893), on Lake Ontario, is the capital of the province, and the second in size of the cities of Canada. It owes much of its greatness to its excellent harbour. Its export and import trade is very great, and its manufactures include all kinds of goods that can be sold in any country of the world. One of the reasons of Toronto's growth is the fact that it is situated in the very heart of a rich and fertile district. The Canadian National Exhibition, industrial and agricultural, which lasts for two weeks in late summer, is a

TORONTO—BIRD'S-EYE VIEW.
(*By courtesy of Toronto Publicity Bureau.*)

tribute to the enterprise and energy of the people of this flourishing metropolis. The University of Toronto and its various colleges have nearly five thousand students.

Hamilton (114,151), the second city of the province, is beautifully situated at the western end of Lake Ontario. It is mainly a manufacturing city, with several very large industrial plants.

Ottawa (107,843), the capital city of the Dominion, is situated on a group of hills which overlook the Ottawa River. The chief features of interest are the Parliament Buildings, of Gothic design, on Parliament Hill.

THE WATER FRONT, TORONTO.
(*By courtesy of Toronto Publicity Bureau.*)

London (60,959), on the Thames River, is the centre of one of the finest agricultural districts in the world. It has over four hundred manufacturing establishments.

Many of the chief cities and towns of Ontario are situated on the main line of the old Grand Trunk Railway from Montreal to Windsor, as this line runs through those sections of Old Ontario which were settled first. It is impossible to classify these cities and towns as manufacturing, or commercial, or residential, since nearly all of them combine all three elements in their population. An asterisk (*) after a name indicates a city as distinguished from a town—that is, a place with at least 10,000 inhabitants.

Between the Quebec boundary and Toronto lie *Cornwall, Brockville,* Kingston,* Belleville,* Trenton, Cobourg,* and *Oshawa.** On the old Grand Trunk line between Toronto and the Detroit River are *Brantford,* Woodstock,* Ingersoll, Windsor,** and *Walkerville* adjoining Windsor. Kingston is the seat of Queen's University and of the Royal Military College. Windsor is opposite Detroit, with which it is connected by a railway tunnel under the Detroit River.

On another line of the old Grand Trunk Railway, running directly west from Toronto to the St. Clair River, are *Guelph,** in which is the Ontario Agricultural College, *Kitchener,** with *Waterloo* adjoining, *Stratford,** and *Sarnia.**

Between Kitchener and Brantford lies the thriving city of *Galt.**

In the Ottawa region are *Smith's Falls* and *Pembroke.*

In the Georgian Bay region are *Owen Sound,* Collingwood,* and *Midland.*

On Lake Simcoe is situated *Barrie,* and on Lake Couchiching, a few miles away, is *Orillia.*

Near the Kawartha Lakes lie *Peterborough* * and *Lindsay.*

Near Lake Erie are *St. Thomas* * and *Chatham* *.

In the Niagara peninsula are *Niagara Falls,* St. Catharines,** and *Welland.*

In Northern Ontario the chief cities and towns are *North Bay,* Cobalt, Timmins, Cochrane, Sudbury, Sault Ste. Marie,* Port Arthur,* Fort William,** and *Kenora.*

Sault Ste. Marie, on the St. Mary River, is a centre of iron and steel manufactures and of pulp and paper making. With its famous " Soo Canal " it is the meeting place of all the waterborne trade between Lake Superior and the Lower Lakes. Fort William and Port Arthur are twin cities on Thunder Bay, at the head of navigation so far as Canada is concerned. They are only two miles apart, and doubtless they will one day unite. Enormous elevators, some of the largest in the world, tell of the millions of bushels of grain which pour annually from the Prairie Provinces through this region, to be forwarded by railway and by steamships to the markets of the world.

GRAIN ELEVATORS, FORT WILLIAM.

Besides this long list of busy places, there are in the Province of Ontario one hundred and forty other towns and villages, with a population ranging between 1,000 and 5,000. When it is added that eighty of these places have not only their Public Schools but also well-equipped High Schools, it becomes clear that Ontario is thinking of much besides factories and shops and agriculture.

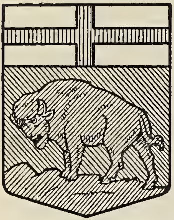
EXERCISE 25

1. In what parts of Ontario, outside the cities and towns, is the population densest ? Can you account for this ?
2. Through what waters would you sail in a voyage from Port Arthur to Sarnia ?
3. Try to find out what cities of Ontario were once called York, Bytown, Berlin, respectively.
4. More than half the people of Ontario now live in towns and cities. Nearly two hundred of those towns and cities have a population of more than a thousand each. Why do people flock to the towns more than they did fifty years ago ?
5. Seven of the counties on Lake Erie and Lake Ontario bear the names of seven counties on the east coast of England. Can you imagine why ? Find these counties on the two maps.
6. Some of the Scottish districts in the province are Glengary, Lanark, and parts of Wellington, Middlesex, and Elgin counties. Find these on the map.
7. In the counties of Prescott and Russell the majority of the people are of French origin. Can you account for this ?
8. Ontario has a right of way, five miles in width, through Manitoba, from the provincial boundary somewhere near 56° north latitude, to Port Nelson. Mark on your map the probable route, as yet not clearly defined.
9. Find on the map Moose Factory and York Factory. Are they both in Ontario ? What does " Factory " mean ?
10. If you travel by rail from Fort William to Kenora, 300 miles, what kind of country will you pass through ? Find out what places there are on the railway line.
11. Find Patricia on the map. How did this region get its beautiful name ? Can you find any towns or villages in Patricia ? See if you can find a railway route on the map which will take you within twenty miles of Patricia.
12. What was the former name of Ontario ? When was the name changed ?

13. When is "Hudson's Bay" the correct form, and when should "Hudson Bay" be used?
14. Find on the map the following lakes, and see what rivers flow into them or out of them—Nipigon, Nipissing, Severn, Abitibi, Temagami, Lake of the Woods, Muskoka Lakes, Kawartha Lakes.
15. Find on the map the following rivers, and see into what lakes they flow—St. Mary River, Spanish River, St. Clair River, Detroit River, Niagara River, the Long Sault.
16. Find on the map—
    (*a*) Manitoulin Island, or Sacred Island, with its numerous summer resorts. Also find the North Channel.
    (*b*) "The Thousand Islands." What are they noted for?
    (*c*) The Chaudière or "Caldron" Falls.
    (*d*) Burlington Bay, the Bay of Quinté, and Nottawasaga Bay.
    (*e*) The Rideau Canal and the Trent Valley Canal.
    (*f*) The Bruce Peninsula. What towns are situated in it?
17. Find on the map—
    (*a*) The Severn River, in the north of Ontario, fifteen times as long as the Severn which flows into Georgian Bay.
    (*b*) The Albany River. Why is it not better known?
    (*c*) White River, during the winter one of the coldest places in all Canada. (Look for it in the Lake Superior region.)
    (*d*) The Porcupine district. Describe how you would go there from where you live.
    (*e*) Algonquin Park, an area of 2,000 square miles set aside by the Government for the use of the people.
    (*f*) The "Clay Belt." To what extent is it suitable for farming?
    (*g*) Algoma. What is the chief place in the district? Also find Michipicoten with its iron mines.
    (*h*) Thunder Cape. Do you know what Canadian poet has made it immortal in verse?—

> "Storm-beaten cliff, thou mighty cape of thunder,
> Rock-Titan of the north, whose feet the waves beat under," etc.

26. MANITOBA



ARMS OF MANITOBA.

THE first white man to set foot within the present boundaries of Manitoba was Sir Thomas Button, who had been sent out from England in search of Henry Hudson. In 1612 he explored the western shores of James Bay, and then went north-west and entered Nelson River. In 1670 the entire territory of Manitoba was included in the grant made by Charles II. to the Hudson's Bay Company. In 1732 La Vérendrye, with his sons and nephew, travelled from the west end of Lake Superior to Lake Winnipeg. It was La Vérendrye who built Fort Rouge, where Winnipeg now stands, and Fort La Reine, the site of Portage la Prairie. In 1775 Samuel Hearne travelled through the northern section of the present Manitoba from Fort Churchill to the Great Slave Lake, which was discovered by him.

The subsequent history of the province is fully told in the history books. The period of the fur trade extends over an era of 250 years. The episode of Selkirk's Red River Settlement (1812), with its tale of hardships, courage, and final success, is a thrilling story. The purchase by the Imperial Government of Rupert's Land and the North-West Territory from the Hudson's Bay Company, and the transference of that immense tract to the Dominion of Canada in 1869, led to the formation of the Province of Manitoba in 1870. When the first transcontinental train of the Canadian Pacific Railway steamed into Winnipeg in 1886, the growth of the city and the development of the province began in earnest. In that year Manitoba had in all about 75,000 people; to-day the population is nearly ten times that number.

The Province of Manitoba, as now constituted, includes important extensions granted by the Dominion Government by the Act of 1912. The total area of the province is 252,000 square miles. It is bounded on the north by Hudson Bay and the District of Keewatin, on the west by Saskatchewan, on the south by North Dakota and Minnesota, and on the east by Ontario. From north to south the province extends 761 miles. The width of the province in the south is 275 miles, and in the north 485 miles.

GRAIN ELEVATORS AT A RAILWAY STATION.
(*By courtesy of the Department of Natural Resources.*)

The southern half of Manitoba lies within the region of the Great Plains. It has been already pointed out that the greater part of Manitoba, east of the Manitoba Escarpment, forms the lowest of the three steppes of the western prairies. The northern part of the province and the section east of Lake Winnipeg are part of the Laurentian Plateau, or Canadian Shield. The general elevation of the plains about Winnipeg is 800 feet above sea-level. There are no big mountains in Manitoba, but several hills, known as mountains, in the south-west are 2,600 feet high. The principal rivers and lakes of

Manitoba and the system of drainage have been already dealt with in Lesson 4.

Manitoba is one of the richest agricultural areas in the world. The land is free from stones and is easy to till. The soil on the lower steppe is composed of deposits gathered on the bottom of a great lake, which geologists tell us covered this western region many ages ago.

The most famous wheat in the world is grown in Manitoba, called No. 1 Manitoba Hard, the flour from which is eagerly sought for in the Old World as well as in the New. This grade has in it at least 75 per cent. of Red Fife, or Marquis Wheat. No. 1 Northern, with 60 per cent. of Red Fife, is nearly as much prized. Besides wheat, oats and barley, rye and flax, are being more and more cultivated in this province.

In Manitoba and the other prairie provinces, the method of handling the ripe grain is different from that employed in the east. The grain is not kept in granaries, but it is threshed in the fields and taken at once to the nearest elevator. The elevators are great buildings containing bins in which the new grain is stored until it can be taken to the mills or to the railway cars. There are many hundreds of such elevators in the Prairie Provinces.

The agricultural pursuits of the Manitoba farmer are more varied than they were twenty years ago. Dairy-farming and cattle-raising are now important additions to the former sole occupation of raising wheat and oats.

The edge of the forest that covers north-western Ontario projects for some distance into eastern Manitoba. This strip of the province furnishes much timber for lumbering operations. The principal trees are spruce, pine, fir, cedar, poplar, birch, elm, ash, and Manitoba maple. The wood is used largely for fuel and for building purposes.

The population of Manitoba—610,118—is about 60 per cent. British. There are in the province 40,000 French, 30,000 Austrians, 20,000 Dutch, 20,000 Germans, 16,000 Jews, 11,000 Icelanders, 13,000 Indians, 16,000 Poles, 14,000 Russians, and 44,000 Ukranians. In Winnipeg 66 per cent. of the people are British in origin—that is, every third person you meet on Winnipeg streets is of foreign origin.

MAIN STREET, WINNIPEG.

Winnipeg (population 180,000) is the capital of Manitoba and the largest city of Western Canada. It is situated at the confluence of the Red and Assiniboine rivers, 60 miles north of the United States boundary. As a Hudson's Bay Company post it was called Fort Garry. It is the financial, commercial, and manufacturing centre of the Middle West. It has extensive railway facilities, with lines running like spiders' webs in every direction. Winnipeg is also the educational centre of the province. It is a city of wide streets, of beautiful homes, and of numerous parks and public squares. Its water supply is one of the finest in the world, the water coming by a 96-mile aqueduct from Shoal Lake, on the boundary line between Manitoba and Ontario.

Brandon (15,397), the second city of the province, is on the Assiniboine, 133 miles west of Winnipeg. It is the centre of a vast wheat belt.

Portage La Prairie is in the heart of the "Portage Plain." In every direction wheat-fields stretch from the town to the horizon. The town is 56 miles west of Winnipeg.

St. Boniface is on the east side of the Red River, opposite the mouth of the Assiniboine and the city of Winnipeg. It is one of the oldest settlements in the province. The French-speaking part of the population is in the majority.

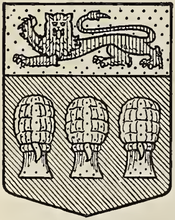
Besides these four cities there are about thirty small towns, scattered throughout the agricultural sections of the province. The largest of these are *Dauphin*, *Selkirk*, and *Transcona*.

EXERCISE 26

1. The eastern steppe of the Prairie Provinces is separated from the middle steppe by the Manitoba Escarpment, 400 feet high, running from near Emerson to the Porcupine Hills on the borders of Saskatchewan. Trace this escarpment on your map.

2. Why has so little use been made of Manitoba's forest wealth ?
3. To what Great Lake ports is the grain of Manitoba carried ? By what routes ?
4. Where do all the rivers of Manitoba finally discharge their waters ?
5. Neither the Red River, the Assiniboine, nor the Churchill River rises in the province. Find their sources.
6. How far is it from the Ontario boundary to Winnipeg ? Use the scale on the map.
7. Before the days of the railways by what routes did the Hudson's Bay Company carry their furs to Europe ? (They had more than one outlet.)
8. About one-eighth of Manitoba is water. Calculate the number of square miles of water in the province. (See Exercise 1, *b*.)
9. Copies of the Bible are sold in Winnipeg in forty different languages. Name some of the foreign languages. (See Lesson 20.)
10. What part of Manitoba contains the strip of land to be selected by Ontario at some future time ? (See Exercise 25, question 8.)
11. Find on your map :—
    - (*a*) Dauphin, Selkirk, Transcona, Emerson, Carman, Minnedosa, Morden, Neepawa, Souris, Virden, The Pas.
    - (*b*) Gypsumville, where about half a million dollars' worth of gypsum is mined each year. What use is made of the gypsum ?
    - (*c*) Duck Mountain and Riding Mountain. What do you notice about the routes of the railways in relation to these mountains ? To what main ridge do these mountains belong ?
    - (*d*) The Barren Lands, north of the Churchill Valley, where only mosses and a few hardy berries grow.
    - (*e*) The most northerly settlement in Manitoba.
    - (*f*) The Hudson Bay Railway, running from The Pas in a north-easterly direction. It now extends to within a hundred miles of Port Nelson. Trace the route. What purpose is this railway intended to serve ?

27. SASKATCHEWAN



ARMS OF SASKATCHEWAN.

The history of Saskatchewan is brief and uneventful as compared with that of the older provinces. The name Saskatchewan, the "Swift Current," is a Cree Indian term applied to the great river of that name, and later given to one of the districts of the North-West. When the Dominion Government, in 1905, created the provinces of Alberta and Saskatchewan out of the four districts of the North-West Territories (the region lying between Manitoba and British Columbia), the name Saskatchewan was preserved in the new province made out of the old districts of Assiniboia, Saskatchewan, and the eastern portion of Athabaska. Regina, which had been the capital of the North-West Territories, was, of course, chosen as the capital of the new province in which it was situated.

Saskatchewan has a very formal shape. It resembles the blunt end of a great wedge. The base of the wedge, at the United States border, is 393 miles wide. The line in the north that cuts off the pointed end of the wedge is 277 miles long. The sides of the area, at the east and the west, are of equal length—761 miles. The province is bounded on the north by the provisional district of Mackenzie; on the west by Alberta, on the south by North Dakota and Montana; on the east by Manitoba.

The southern part of Saskatchewan occupies a part of the second steppe of the Great Central Plain. The northern part belongs to the Laurentian Plateau. Nearly the whole province has an easterly slope, draining by different routes into the distant Hudson Bay. A considerable area of the province, however, falls within the Mackenzie Slope, which drains toward the Arctic. Of the Hudson Bay Slope the northern part is drained by the Churchill, with its feeders, the Beaver, the Montreal, and the Reindeer rivers. The central parts of the province are drained by the Saskatchewan and its great tributary, the South Saskatchewan.

HARVESTING ON THE PRAIRIE.
(*By courtesy of the Department of Natural Resources.*)

This province is essentially agricultural. Its rolling plains and rich valleys are so fertile that it is no exaggeration to say that there is no better wheat-producing region of vast proportions anywhere in the world. There is room in the wide stretches of Saskatchewan for at least three times as many farmers as there now are in the province, for only twenty million of her seventy million acres have been occupied. But all the world has heard of Saskatchewan, and great numbers of settlers are pouring in every year. In the first year of the century only 100,000 lived within the present boundaries of the province; to-day eight times that number have comfortable homes there.

Although Saskatchewan is a prairie province, quite half of it is more or less forested. In the middle region prairie and forest are intermingled, and most of the land will one day be cultivated farms. In the Forest Belt, north of the Churchill, not much of the land will ever be under crop. The trees of Saskatchewan are mainly of the same species as those of Manitoba.

The racial origin of the people of Saskatchewan differs in some important respects from that of the people of Manitoba. Only 55 out of every 100 of the people of Saskatchewan are of British origin, and this 55 per cent. includes most of those immigrants who have come into Canada from the United States. Of the foreign population, 68,000 are Germans, 45,000 are Russians, 31,000 are Norwegians, 40,000 are Austrians, 28,000 are Ukranians.

Regina (population, 34,432), the capital, dates back only to 1882. Its name was given to the place by the Marquis of Lorne in 1883. It was incorporated as a city in 1903. This young metropolis has already twelve lines of railway radiating from it, and boasts of manufactures of many kinds and of many flourishing commercial houses.

Saskatoon (25,739) is in the very heart of a rich wheat-growing tract. It is an educational centre and the seat of the provincial University. Its growth has been marvellous, from a hundred people in 1900 to its present population of two hundred and fifty times that number.

Moose Jaw (19,285) is a progressive city 50 miles west of Regina, in a fine agricultural region.

Prince Albert is beautifully situated on the south bank of the North Saskatchewan, a few miles above its junction with the South Saskatchewan. The farmers of this region do not depend entirely on wheat, for mixed farming is becoming more and more common here. The city has, too, many lumber mills, and is an important depot of the fur trade.

GOVERNMENT BUILDINGS, REGINA.
(*Photo from British and Colonial Press.*)

Swift Current is the centre of a district of both grain farms and cattle ranches.

North Battleford is on the north bank of the Saskatchewan, nearly opposite the old town of Battleford, once the capital of the North-West Territories.

Weyburn is the most south-easterly city of the province.

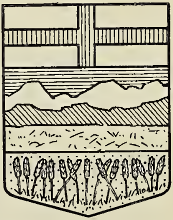
Yorkton is a rapidly-growing town, 120 miles north-east of Regina.

EXERCISE 27

1. Find in your history book what is said of the Saskatchewan Rebellion (" North-West Rebellion ") of 1885. What was the cause of the trouble? How did it end?
2. What does *Regina* mean? Who gave that name to the capital of Saskatchewan?
3. Why have so many Americans left their own country and moved to Saskatchewan in the last twenty years?
4. In what other provinces have you found parts of the Laurentian Plateau?
5. Why is the north-west part of Saskatchewan called the " Mackenzie Slope "?
6. What is meant by the phrase, " The Arctic watershed "? Is there any part of it in Saskatchewan?
7. Find the meaning of *tundra* and *muskeg* as applied to certain peculiarities of the extreme north of Saskatchewan.
8. Find on the map the Qu'Appelle and Souris rivers.
9. Find also the " Missouri Coteau," the escarpment between the second and third steppes of the Great Central Plain.
10. How much of Lake Athabaska is in Saskatchewan?
11. " The Churchill River is really a chain of lakes." By studying the map, see to what extent this statement is true.
12. What do you notice in the western provinces as to the division into counties, so common in the older provinces?
13. At 25° below zero in winter children play out of doors in Saskatchewan. Do you ever have that temperature where you live? What is the coldest weather you ever experienced?
14. There are 345 towns and villages in Saskatchewan. See if you can find on the map the three largest of these—Estevan, Kamsack, and Melville, each having over 2,000 inhabitants.
15. If you continue the east and west boundary lines of Saskatchewan toward the north till they meet, where do you think they will meet? Use a ruler to determine the point.

28. ALBERTA

Parts of what is now the Province of Alberta were first discovered, and partially colonized, by the French. Fort La Jonquière, near the site of Calgary, was established in 1752. The North-West Company of Montreal, the great rival of the Hudson's Bay Company, built Fort Athabaska in 1778. Fort Chipewyan was founded in 1788. A little later Alexander Mackenzie explored the river which now bears his name, and then reached the Pacific coast through the Peace River Pass. In 1905 the Dominion Government created the new Province of Alberta out of the former district of Alberta, the western half of the district of Athabaska, and a strip of Assiniboia and Saskatchewan.

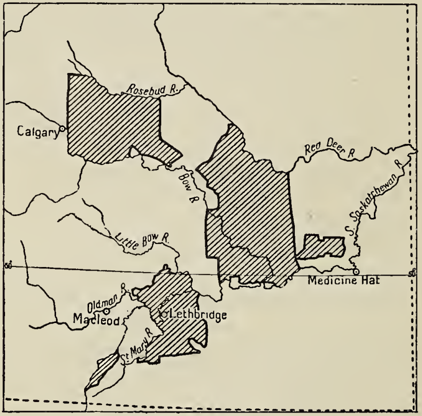


ARMS OF ALBERTA.

Alberta is bounded on the east by Saskatchewan, on the south by Montana, on the west by British Columbia, and on the north by the provisional district of Mackenzie. The northern part of the western boundary is the meridian of 120°. The province is 750 miles long, and has an average width of about 350 miles. Its area is 255,000 square miles.

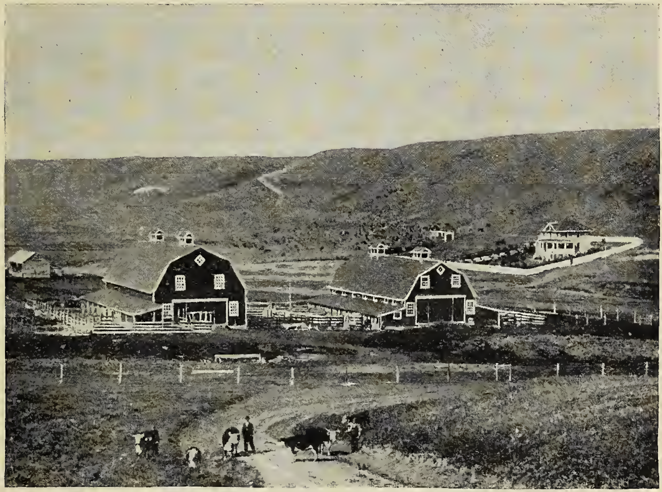
The third and widest steppe of the Great Central Plain includes most of Alberta. This steppe has a marked easterly slope, the height of the land in the east being about 2,000 feet above sea-level, while the height of the west at the foothills of the Rockies is about 4,000 feet. Southern Alberta is an open, rolling country without trees, excepting in the region of the foothills. Northern Alberta is timbered country with vast patches of prairie. In the very north of the province lies the famous valley of the Peace River. In this valley the elevation is 1,500 feet lower than in the tract to the south, and so the climate is milder in spite of the more northerly position. The agreeable climate and the fertile soil of the Peace River Valley are attracting thousands of settlers.

The rivers of Alberta flow, in the main, from west to east. In the south the Belly and Bow rivers unite to form the South Saskatchewan, which is joined farther east by the Red Deer River. The most important river in the province, the North Saskatchewan, after receiving numerous tributaries, flows east into the province of Saskatchewan, to be joined there by the South Saskatchewan.



THE IRRIGATED AREAS, ACTUAL OR PROSPECTIVE.

As in the other prairie provinces, agriculture is the chief industry of Alberta. In the south of the province there is a "dry zone," which receives in some years only 8 or 10 inches of rain, instead of the 18 or 20 inches necessary for successful grain-growing. The wet and the dry periods seem to run in cycles of years, as the annual rainfall from 1911 to 1916 averaged 15 inches in this so-called "arid region." Indeed, in 1923 the wheat production of Alberta surpassed that of Manitoba. Alberta, especially in the southern districts, was once a famous ranching and cattle-rearing country, but the farmers are now looking more and more to the cultivation of their fields. In the dry belt great irrigation canals have been dug, with branch canals for the individual farms, and thus over a million acres of formerly unprofitable land have been made to yield good returns. Nevertheless, millions of acres of Southern Alberta must always go without crops in rainless years. The cowboy, therefore, will not soon entirely disappear



CATTLE RANCH, SOUTHERN ALBERTA.
(By courtesy of the Department of Natural Resources.)

from the ranch-land south of Calgary. The E.P. Ranch, near High River, purchased by the Prince of Wales in 1919, has given a new stimulus to the raising of live stock in Western Canada.

Alberta is exceedingly rich in coal deposits, possessing no less than 15 per cent. of the world's coal reserves. All three kinds of coal—bituminous, lignite, and anthracite—are found in the province. The largest lignite areas are in Lethbridge and Edmonton districts. Near Yellowhead Pass and Crow's Nest Pass is mined excellent bituminous coal. At Bankside, near Banff, there is an immense reserve of fairly good anthracite, but the great abundance of the cheaper coals has interfered with the development of the hard coal area. Alberta has now an annual coal output of more than 6,000,000 tons, a little over half being lignite, and a little under half bituminous. This is somewhat greater than the output of Nova Scotia, and twice as great as that of British Columbia.

The racial origin of the people of Alberta resembles closely the conditions in the other prairie provinces. The people of British origin number about 60 per cent. of the whole population. The immigrants from other European countries are: Germans, 35,000; Ukranians, 24,000; Norwegians, 21,000; Russians, 21,000; Austrians, 19,000; various, 70,000. There are also in the province 45,000 of Indian and French origin.

Edmonton (population, 58,821), the capital of Alberta, is beautifully situated on a tableland, 200 feet above the North Saskatchewan River. On the opposite bank is *Strathcona,* amalgamated with the capital in 1912, and now called *South Edmonton.* Edmonton was long an important post of the Hudson's Bay Company, and is still one of the chief centres of the fur trade. It stands in the centre of a rich agricultural district. Coal is extensively mined in the neighbourhood.

Calgary (63,305), on the Bow River, is the largest city of the province. It has many important trades and industries. The residential heights of the city command a splendid view of the foothills and the nearest peaks of the Rockies.

Lethbridge (11,097), 95 miles south-east of Calgary, is the centre of a great coal-mining district. *Medicine Hat,* 175 miles south-east of Calgary, is on the South Saskatchewan. It enjoys a mild winter climate. The Chinook winds often raise the temperature 50° or 60° in a few hours. This city serves a fine ranching and wheat-growing section of the province. The immense supplies of natural gas near at hand have increased the prosperity of Medicine Hat.

EDMONTON FROM THE SOUTH.
(*By courtesy of the Canadian Pacific Railway.*)

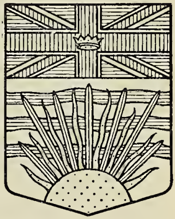
Red Deer is a thriving town 80 miles north of Calgary on the way to Edmonton. *Wetaskiwin,* 40 miles south of Edmonton, has stock-yards, grain elevators, and flour-mills.

EXERCISE 28

1. Find on the map the four mountain passes leading from Alberta to British Columbia—(*a*) Crow's Nest, (*b*) Kicking Horse, (*c*) Yellowhead, (*d*) Peace River. On a railway map find what railways go through any of these passes.
2. Trace the course of the Athabaska River. What new name does it receive in the north of the province, after it flows out of Lake Athabaska and unites with the Peace River ?
3. There are forty mountain peaks in Alberta more than 10,000 feet high. Can you point out a few of them on the map ?
4. Where in Alberta do the Chinook winds blow ? What remarkable effect do they cause ?
5. Why is Alberta coal not used extensively in Ontario ?
6. There is now a Government railway running 300 miles north of Edmonton to Fort McMurray. It is called the Edmonton and Waterways Railway. Trace its route northward, to the east of Lac la Biche.
7. Why are so many of the towns and villages of Northern Alberta called " forts " ?
8. Find on the map—
   - (*a*) Athabaska Landing, Fort McMurray, Fort Chipewyan, Fort Smith, and Fort Vermilion.
   - (*b*) Lesser Slave Lake and Lake Clair.
   - (*c*) The small towns of Macleod, Camrose, and High River.
   - (*d*) Banff, the famous holiday resort, with its sulphur springs.
   - (*e*) Laggan, with the mighty glaciers near.
   - (*f*) Okotoks, with its gas and petroleum fields.
   - (*g*) The famous Lake Louise and Jasper Park.
   - (*h*) The Milk River (in Southern Alberta), which joins the Missouri in Montana. Where do its waters, after a very long course, reach the sea ?
   - (*i*) The valley of the Red Deer River, near Red Deer, where there have been dug up the fossils of giant reptiles, now deposited in the largest museums of Canada.

29. BRITISH COLUMBIA

Captain James Cook explored the coasts of what is now British Columbia in 1778, and landed at Nootka on Vancouver Island. During 1792–94 Vancouver surveyed the entire coast-line of the region for the British Government. In 1793 Alexander Mackenzie, a partner in the North-West Company, found his way from Fort Chipewyan across the Rockies to the Pacific. In 1808 Simon Fraser made his famous descent of the river named after him, and three years later David Thompson, also of the North-West Company, traced the Columbia River from its source to the sea. In your history book you will read of the interesting developments of the next sixty years, including the discovery of gold on the Fraser River in 1858. In 1871 British Columbia became a part of the Dominion of Canada. In 1885 the Canadian Pacific Railway was completed, and the western province was linked with eastern Canada.



ARMS OF BRITISH COLUMBIA.

British Columbia is bounded on the east by Alberta; on the north by Yukon and the provisional district of Mackenzie; on the west by a portion of Alaska and by the Pacific Ocean; on the south by the states of Washington, Idaho, and Montana. Vancouver Island, the Queen Charlotte Islands, and many small coastal islands also form part of the province. You have read in Lesson 1 the disagreeable story of the cutting off from Canada of the so-called "Pan-handle of Alaska." British Columbia is more than 750 miles long, and has an average width of about 400 miles. It is the third in size of the nine provinces.

The wonderful mountain system of British Columbia has been described already in Lesson 3. Mention has also been made of "The Island Range," running parallel with the Coast Range, but largely submerged beneath the waters of the ocean. The peaks above water form the countless islands along the coast. Vancouver Island and the Queen Charlotte Islands are parts of the Island Range.

British Columbia has a very interesting river system. The courses of the rivers suggest to us a fourfold division of the province. (1.) In the north-east, beyond the Rocky Mountains, is a region belonging to the Great Plains. It is drained by the Peace and Liard rivers into the Mackenzie basin. (2.) In the north-west of the province are two great rivers—the Skeena, reaching the sea at Prince Rupert, and the Stikine, running through the Alaska "pan-handle," to reach the sea at Wrangel. (3.) Central British Columbia is drained by the Fraser River, 750 miles long, and its tributary, the Thompson River. (4.) The south-eastern part of the province is drained by the Columbia and its many tributaries. This great river, after a very irregular course of 600 miles in Canada, crosses the international boundary, and after a further course of 800 miles in the State of Washington reaches the Pacific Ocean.

British Columbia has a wealth of natural resources not possessed by any other province. The soil of the valleys and much of the upland soil are very fertile. The forests are among the most valuable in the world. The mineral riches are beyond calculation. The fisheries are more extensive and profitable than those of the Maritime Provinces. The fur industry still flourishes. The water resources for power development surpass all present demands.

British Columbia has 12,000,000 acres of land suitable for agriculture, but only about 3 per cent. of it has actually been tilled. The luscious fruits of this province are carried

COAST SCENE AT THE PORTLAND CANAL, BRITISH COLUMBIA.
(By courtesy of the Canadian National Railways.)

to the ends of the earth. The Okanagan Valley, in the Yale district, is a very Garden of Eden.

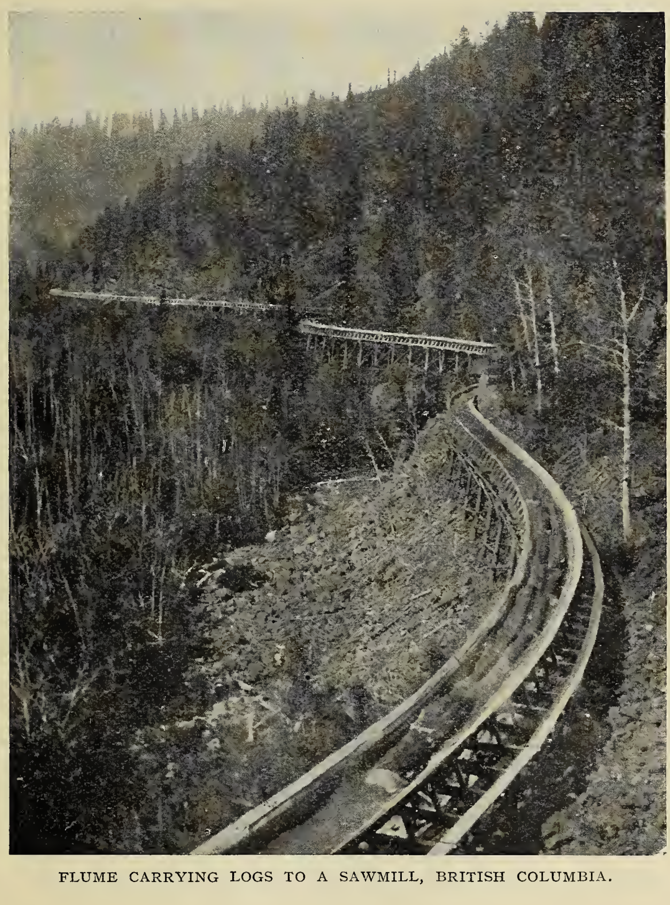
The forests of British Columbia rival her mountains and her rivers in their wonders. Some of the largest and oldest trees in the world grow here. The four species most noted are the Douglas fir, the western hemlock, the red cedar, and the Sitka or silver spruce. The Douglas fir has an average height of 200 feet, and an average diameter of 5 feet, but it sometimes reaches 250 feet in height and 9 feet in diameter. Many of these majestic trees are five hundred years old, and a few of them nearly double that age. The clearness of the wood and the beauty of the grain of the British Columbia trees owe much to the perfect climate which nourishes them. The Sitka spruce supplies excellent wood for the construction of aeroplanes, as was found in the Great War.

This land of mountains is rich in minerals. The Cariboo goldfields were once the Mecca of adventurers, and even yet they yield an annual output which pays the miner. Silver, copper, lead, and zinc are abundant. In the Kootenay district there are large deposits of silver, lead, and zinc ore. Coal is obtained near the town of Fernie in the region of the Crow's Nest Pass, as well as in the Comox and Nanaimo fields of Vancouver Island. The annual output, mostly bituminous, is nearly 3,000,000 tons.

For full details regarding the splendid fisheries of British Columbia see Lesson 10 of this book. In good years the value of the fish caught in this western province is over $25,000,000.

The population of British Columbia is now 524,582. About 75 per cent. are of British origin. There are in the province 23,500 Chinese and 15,000 Japanese. The number of Indians is 22,400, and the number of people of French origin is 11,300. There are only 7,300 Germans and 7,400 Russians.

Victoria (population, 38,727) is the capital of the province.



FLUME CARRYING LOGS TO A SAWMILL, BRITISH COLUMBIA.

It is situated in the south-east of Vancouver Island. It is mainly a residential city, with many beautiful parks.

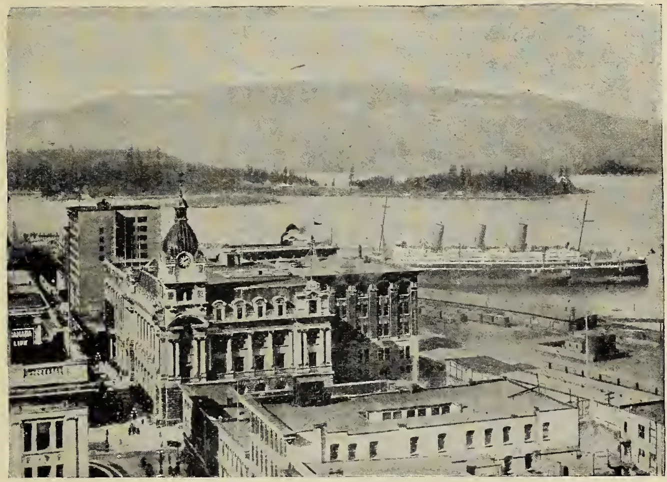
Vancouver (117,217), the chief city of British Columbia, is situated on Burrard Inlet, an arm of the Strait of Georgia. It is the western terminus of two of the Canadian transcontinental railways—the Canadian Pacific Railway and the southern transcontinental line of the Canadian National Railways. The city has a fine natural harbour, open all the year round, with 80 miles of water frontage. Twenty-six parks adorn this thriving metropolis, including Stanley Park with its giant trees. Vancouver is one of the outlets of the grain of the Prairie Provinces, of which it now handles many millions of bushels each year (see the last paragraph of Lesson 18). Forty years ago the site of Vancouver was a forest. By the railways it has been made a great city, and the centre of all the large industrial enterprises of the province.

North Vancouver, also on Burrard Inlet, is a residential suburb of Vancouver.

New Westminster (14,495) is 12 miles south-east of Vancouver, on the Fraser River. It was an important town and the capital of British Columbia before the city of Vancouver existed.

Nanaimo is a seaport and coal-mining centre on the east coast of Vancouver Island. *Prince Rupert* is the terminus of the northern transcontinental line of the Canadian National Railways. It lies 500 miles north of Vancouver. It has an excellent harbour, and must soon become a great city. *Nelson* is on the west arm of Kootenay Lake. It is a centre of smelting and lumbering industries.

Some smaller towns of British Columbia are: *Kamloops*, with lumber mills and railroad shops; *Fernie*, a coal-mining centre; *Trail*, with large smelting works; *Rossland*, another mining centre; and the rapidly-growing new town of *Vernon*.



VANCOUVER: STANLEY PARK AND HARBOUR ENTRANCE IN DISTANCE.
(*By courtesy of the Canadian Pacific Railway.*)

EXERCISE 29

1. How much of the Columbia River is in Canada and how much in the United States? (State the answer in miles.) Find the source of the river in British Columbia.
2. What provinces of Canada are larger than British Columbia?
3. What is *placer* mining? How does it differ from *lode* mining?
4. Why are there more Chinese and Japanese in British Columbia than elsewhere in Canada?
5. Measure by the scale on your map the length and the width of Vancouver Island.
6. Why are the rivers of British Columbia so rapid, and why do they twist and turn so much?

7. What makes the scenery of British Columbia the most beautiful in Canada ?
8. Read over again Lesson 7, and then write a short paragraph on the climate of British Columbia.
9. What constitutes the southern front of the boundary line between British Columbia and Alberta ?
10. Which part of the Rockies is the best crossing-place from the Athabaska basin to the basin of the Fraser River ?
11. Find on the map—
    (*a*) Cassiar district, in the north of the province.
    (*b*) Lillooet district, north of Vancouver.
    (*c*) Yale, Kootenay, and Cariboo districts.
    (*d*) Quesnel Lake, the famous spawning region of the sockeye salmon.
    (*e*) The Portland Canal, the most northerly inlet of the Pacific in British Columbia.
    (*f*) Port Simpson, near the Portland Canal.
    (*g*) Esquimalt, a naval station, with an excellent harbour and large dry docks.
    (*h*) The Selkirk Range, with its numerous glaciers.
12. Find on the map—
    (*a*) Hecate Strait. What regions of land does it separate ?
    (*b*) The name of the strait that separates Vancouver Island from the State of Washington.
    (*c*) The names of the strait and of the sound which separate Vancouver Island from the mainland.
13. Name the four principal ranges of mountains in British Columbia.
14. Find on the map " The Interior Plateau " of the province.
15. Does the map show many lakes in British Columbia ? Find the Upper and Lower Arrow Lakes.
16. Find what is called " The Rocky Mountain Trench," 700 miles long, just west of the Rockies, along which flow, for part of their courses, the Kootenay, Columbia, and Fraser rivers.
17. Find on the map these towns, each having 2,000 or more inhabitants—Cumberland, Revelstoke, Cranbrook, Prince George.

30. YUKON AND THE NORTH-WEST TERRITORIES

BEFORE the discovery of gold on the Klondike River in 1896 Yukon was inhabited by only a few Indians. By 1898 nearly 40,000 people had gone in to make their fortunes. At the last census, however, the population had declined to 4,157. The remarkable decrease tells the tale of the ebbing of the gold "boom."

The territory of Yukon extends from British Columbia to the Arctic Ocean, and from the Alaskan boundary to the Rocky Mountains. It has an area of 200,000 square miles.

Yukon has many large rivers. The Yukon River is the largest river of the American continent that flows into the Pacific Ocean. This great river is formed by the union of the Lewes and Pelly rivers near Fort Selkirk. From Fort Selkirk it flows north-west, soon to receive the waters of the Stewart and to pursue its long journey to the Arctic Circle through Alaska. It still has, after turning west, a thousand miles to go before it reaches the Behring Sea. The total length of the river is 2,300 miles. The most famous tributary of the Yukon is the little river Klondike, which enters the main stream at Dawson City.

The surface of Yukon is mainly a plateau, from 2,000 to 3,000 feet above sea-level. There are many hills and mountains, the highest mountain being Mount Logan (19,539 feet) on the extreme western border.

The winters of Yukon are long and very cold, but the short summers are often exceedingly hot. Wheat and the hardier vegetables and plants are successfully grown not only in the south but even at Dawson.

Dawson, at the junction of the Klondike and the Yukon, is the capital and chief town. During the summer months it is connected by steamer with Whitehorse. There is a railway from Whitehorse, through a copper-mining section, to Skagway in Alaska, at the head of the Lynn Canal.

The vast region of Canada east of Yukon and north of the Prairie Provinces, Ontario, and Quebec, is called by the collective name of the North-West Territories. It is divided into three great districts—Mackenzie, Keewatin, and Franklin.

The provisional district of Mackenzie consists, for the most part, of the basin of the great Mackenzie River. It contains two great lakes—the Great Slave Lake and the Great Bear Lake—besides innumerable smaller lakes. Many sections of the district are thronged with valuable fur-bearing animals. The population of the district is almost entirely composed of Indians and Eskimos. The forts and stations of the Hudson's Bay Company dot this immense area, and are the only centres of civilized life.

The Mackenzie basin, within the Arctic Circle, fills every traveller with amazement in summer. On Midsummer Day at Fort Good Hope the sun does not set at all, but merely touches the horizon at midnight. The meadows are gay with flowers, and vegetables flourish in the gardens, for growth is strong and rapid under the genial rays of continuous sunlight. In midwinter, however, when the sun only shows his disc in the south at noon, and the temperature is 60° or 70° below zero, one might prefer to live where the sun rises higher.

East of Mackenzie is the provisional district of Keewatin. This is a district entirely without roads. Only in summer do adventurers go into this home of the caribou and the musk-ox. The dwellers in this district are mainly Eskimos, who often journey south 200 or 300 miles from their Arctic homes. Every season some of them appear at Fort Churchill with their furs.

The real home of the Central or Canadian Eskimos is in the Arctic Islands, now called the provisional district of

Franklin. Of this remote region little is known. The stories of the great explorers alone afford us any information about these strange tracts of northern Canada. The tragic fate of Hudson and of Franklin will always be a warning to travellers regarding the rigours of the polar seas and islands. The Eskimos themselves, accustomed to their life of toil and hardship, appear to thrive, for there is no indication that their numbers are diminishing.

ESKIMO WOMAN AND CHILDREN.
(By courtesy of the Hudson's Bay Company.)

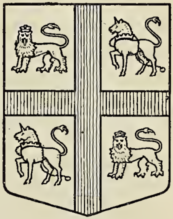
EXERCISE 30

1. Find that section of Yukon which is drained by the Liard River, a tributary of the Mackenzie.

2. Yukon sends one member to the Dominion Parliament. Trace the route he would take from Dawson to Ottawa.
3. The southern boundary of the Barren Lands, that treeless wilderness of rocks and swamps, runs from the north-east corner of Manitoba to the north-east corner of Great Slave Lake and thence to the mouth of the Coppermine River. Trace this boundary on the map.
4. In Longfellow's "Song of Hiawatha," near the end, will be found the meaning of "Keewatin" (there called Keewaydin). Find that meaning.
5. The population of the three provisional districts in 1921 was 8,000, or one person to every 150 square miles. What, then, is the area of the North-West Territories?
6. Find on the map, in the district of Mackenzie—
    - (*a*) Fort Resolution, a centre of the fur trade.
    - (*b*) Fort Norman, famed for its oil-fields.
    - (*c*) Fort Macpherson, near the delta of the Mackenzie.
    - (*d*) Fort Simpson, where the Liard joins the Mackenzie.
    - (*e*) Coppermine River and Coronation Gulf, discovered by Samuel Hearne in 1771.
7. Find on the map, in the district of Keewatin—
    - (*a*) Chesterfield Inlet.
    - (*b*) Southampton Island.
    - (*c*) Cape Eskimo.
    - (*d*) "The Two Brothers," "The Sleepers," "The Baker's Dozen."
8. Find on the map, in the district of Franklin—
    - (*a*) Victoria Island and Baffin Island.
    - (*b*) Melville Sound, Fox Channel, the Gulf of Boothia.
    - (*c*) King William Island, near which Franklin and his party perished, 1847-48.
9. Find on the map the "North Magnetic Pole," latitude 70° 05′, longitude 96° 46′ W. In what district is it? Who discovered it? When?

31. NEWFOUNDLAND

Newfoundland, at the front door of Canada, is not a part of the Dominion. The relations between this, the oldest British colony, and Canada are so close, however, that a brief survey of the island is necessary here.



ARMS OF NEWFOUNDLAND.

Newfoundland is supposed to have been visited by the Norsemen five hundred years before the time of Columbus, and there is a tradition that its fisheries were known to the men of northern France before the time usually assigned to its discovery. If we confine ourselves to the written records, however, we may say that Newfoundland was discovered by John Cabot in 1497. He seems to have landed at Bonavista Bay on the east coast. Sir Humphrey Gilbert landed where St. John's now is, in 1583, and took possession of the country in the name of Queen Elizabeth. In 1763 there were only 8,000 people in the island. By 1814 the population had increased to 50,000. To-day there are 250,000 people in the island. The French and the Spanish called the island " New Land," and the English styled it " New Found Land."

Within a century a great fishing industry sprang up. Large fleets of fishing vessels from England and other countries in the west of Europe were reaping a rich harvest year by year. Settlements were also made on the island, where boat-building and other occupations were carried on during the winter, and these increased after the English occupation.

The development of the island, however, was greatly hindered by the fishing merchants, who wished it to remain a mere fishing-station. Laws were passed to prevent the building of houses or the cultivation of the soil, and it was not till 1811 that those absurd restrictions were removed. The free growth of the colony, therefore, only became possible about a century ago, and during that century much progress has been made.

The climate of Newfoundland is mainly determined by the influence of the sea. It closely resembles that of the Maritime Provinces. Its more northerly latitude gives a slightly lower summer temperature, while its insular position gives a more equable climate, free from extremes of heat or cold. The cold Arctic current brings drifting icebergs to the east coast, and fogs are common, which, however, do not extend far inland.

Newfoundland stretches across the Gulf of St. Lawrence, to which access is easy at both the northern and southern extremities of the island. At the north is the Strait of Belle Isle, and at the south Cabot Strait. The principal capes are Cape Norman in the north, Cape Ray in the south-west, and Cape Race in the south-east.

The coast of the island is very irregular, and there are numerous inlets. The principal bays are Placentia Bay and Fortune Bay in the south, Notre Dame Bay in the north-east, St. George Bay and Bay of Islands in the west, Bonavista Bay in the east, and, most important of all, Conception Bay in the south-east.

The surface of the island near the coasts is hilly and rugged. In the interior is an undulating plateau of low hills, woods, lakes, valleys, and marshes. The lakes and rivers of Newfoundland are too numerous to record here.

The great industry of the island is, and has always been, fishing and the curing of fish. Cod are caught mostly in the bays and inlets and also on the Grand Bank. The streams of the island are filled with salmon and other fish. Lobsters are trapped along the coasts.

Allied to the fishing industry is the catching of seals on the ice-floes in March, April, and May. Thousands of these marine animals are captured every year for their skins and blubber.

The forest wealth of Newfoundland is very great. In particular, spruce, fir, and other trees suitable for making paper-pulp abound in many districts. Extensive pulp and paper mills have been erected at Grand Falls, Bishop's Falls, and other places. The total export of paper and pulp now amounts to nearly half that of the fishery products, and is double that of the mineral ores.

DAVIS INLET, LABRADOR.
(By courtesy of the Hudson's Bay Company.)

As the island is rich in minerals, mining is more and more engaging attention. Iron ore, in limitless quantities, exists in the mines of Wabana, near St. John's. Over a million tons a year are sent to Nova Scotia and to Europe. Coal is also found in several parts.

Agriculture is pursued by the dwellers in the river valleys, but the soil of the island is, in general, not very well adapted for farming. A railway traverses the island by a northerly course from St. John's to Port aux Basques, with a number of branch lines serving the larger towns.

St. John's (38,000), the largest city, and the capital of the island, is situated on a spacious harbour in the south-east, near Conception Bay. Other towns with over 3,000 of a population are *Bonavista, Harbour Grace, Grand Falls, Carbonear,* and *Twillingate.*

Newfoundland includes not only the great island, but also a strip of land on the east coast of Labrador. This strip, 700 miles in length, was ceded to Newfoundland as early as 1763. Then it became a part of Canada for a time, only to be restored to Newfoundland in 1809. The boundary of this coast strip, however, has not yet been determined.

This coast of Labrador is a rich fishing ground, for about one quarter of Newfoundland's yearly catch of cod comes from the Labrador region. About 15,000 people are engaged in the summer fisheries, employing nearly a thousand vessels. There is also a resident population of about 4,000. Besides cod, salmon and herring are abundant.

Communication is wholly by sea. The largest settlement is Battle Harbour, in the south. Towards the north are Indian Harbour, Hopedale, Davis Inlet, Nain, and others, with a considerable Eskimo population.

EXERCISE 31

1. How can you by one word describe the shape of Newfoundland?
2. Why do steamers during May and June take the longer route, by Cabot Strait, from Quebec to Europe, rather than the shorter route by the Strait of Belle Isle?

ST. JOHN'S.

3. Find on the map the French islands of St. Pierre, Miquelon, and Little Miquelon (or Langley). They are all that is left of French territory in North America.
4. Why is the east coast of Newfoundland cooler than the west coast?
5. St. John's is the true spelling of the capital, although it was once St. John. Why would the form St. John now lead people astray?
6. See if you can discover the causes of the fogs of Newfoundland.
7. How do we know that the floor of the Atlantic between Newfoundland and Ireland is one of the most level plains in the world?
8. How does the Gulf Stream affect the temperature of Newfoundland?
9. Why is it now difficult to find in the island a good specimen of the famous Newfoundland dog?
10. What is the name of the principal inlet on the coast of Labrador? Measure how far it runs inland.
11. Find out what you can about Dr. Grenfell's work in Labrador.
12. Labrador was probably discovered by the Norsemen, about 1000 A.D. Find what your history books say about this.
13. Find on the map—(*a*) Heart's Content and Heart's Delight, on Trinity Bay, to which region come several Atlantic cables; (*b*) the "Great Barrens," with their vast herds of caribou; (*c*) Avalon Peninsula, the most populous region in the island; (*d*) "Grand Lake," the largest lake in the island; (*e*) "Long Range," 200 miles long, with peaks 2,000 feet high; (*f*) Bell Island, in Conception Bay, with the largest reserve of iron ore in the world.

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